

# Water and health for all?

by Chiranjiv Singh

**A warning about water contamination and shortages stresses the vital need for a national water policy in India.**

THE INTERNATIONAL Drinking Water Supply and Sanitation Decade has ended. The present decade will take us to the year 2000, with its goal of 'Health for All by 2000'. To realize that goal, we must have 'Water for All' in this decade, so the theme of the Delhi Consultation,\* 'Sustainability of Water: Quality and Quantity', was most appropriate.

The goals 'Water for All and Health for All' — we cannot have health for all without water for all — should be seen in the context of UNICEF's assessment that 60 per cent of rural families in developing countries still lack safe water and 85 per cent lack adequate sanitation. According to Ian Dirickx of the International Water Supplies Association, there were 200 million people without safe water in 1966; there were 300 million in 1986. Questions about sustainability of quality and quantity of water, therefore, are immediately relevant.

Globally, farming accounts for some 70 per cent of water used, but in India it accounts for 92 per cent. The increasing demand for water for domestic use, sanitation, and industrial purposes as a result of population growth will compel us to choose between one use and another, with all the economic and political implications of that choice. It also means striking a correct balance between the present needs and long-term effects on the environment and society.

## Water quality

The proper management of our land and water resources has begun to receive some attention, but not enough attention is being paid to the quality of our water. D.N. Kulkarni and others, writing in the *Indian Journal of Environmental*

*Health* on the 'Performance of Domestic Water Filters' (Vol.22 No.1), have said:

More than two million deaths occur yearly in India because of water-borne diseases and over 50 million people are partially incapacitated annually by these ailments. Even today, the rural population depends upon well water as a source for drinking purposes. In some villages piped water schemes have been installed but the water supplied is generally without disinfection . . . Experience had shown that the bacterial quality of well water is on the whole seldom entirely satisfactory.

J.S. Sandhu of the Central Food Technology Research Institute, Mysore, found 95 per cent of the water supply samples in Mysore contaminated with coliforms and *E.coli*. In another study carried out by D. Vijaya Rao and K.R. Gopala Rao of the Defence Food Research Laboratory of Mysore, the water samples were found to contain, besides coliforms, *Klebsiella pneumoniae*, a drug-resistant opportunistic pathogenic organism.

A few years back at the NAWDA (National Association of Water Resources Development Agencies) convention at Pune it was reported that 90 per cent of the groundwater samples tested in Tamil Nadu were found to be contaminated. NAWDA had given a simple solution for reducing the aquifer contamination: 'do not keep pipes on the ground, keep them on platforms, and do not allow water to stagnate around handpumps'. But this has not been done. Quality of water is not an area of concern with most state governments. Maharashtra is a notable exception: it has 26 Public Health Laboratories under the Directorate of Health Services, which keep a watch on the quality of water. The State Public Health Laboratory, Pune, brings out a bulletin which gives information on the quality of water. The Maharashtra model of Public Health Laboratories has been commended as a model by the WHO.

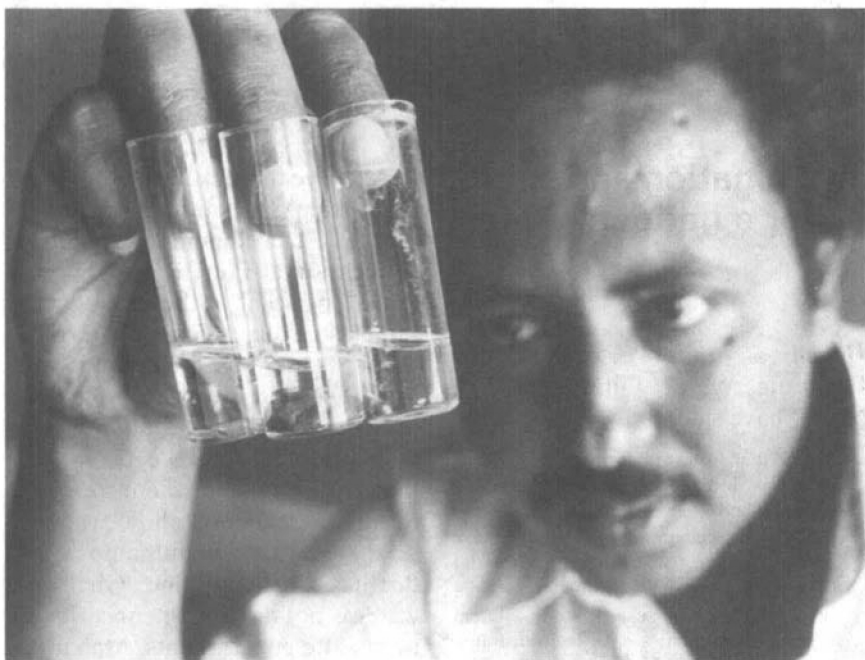
In other states there are hardly any arrangements for testing the quality of water. As Director of Mines, Geology and Groundwater of Karnataka (DMG), I had difficulty in getting water samples tested in Bangalore for pathogens. The



L. Taylor/WHO

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*In India 92 per cent of all available water is used on farming, compared to 70 per cent world-wide.*



*A central co-ordinating agency is needed to plan future development in the water sector and to ensure co-operation between departments.*

WHO specifications for potable water lay down 57 chemical parameters, five micro-biological parameters, and absence of nematodes and protozoon parasites. No single laboratory in India is equipped to undertake all these tests.

Systematic surveys are carried out, and macro and micro watersheds, the problems of drilling in hard rock areas, surface run-offs, and siltation rates are all studied, but there are very few studies on water quality and pollution levels. There is little statutory backing for

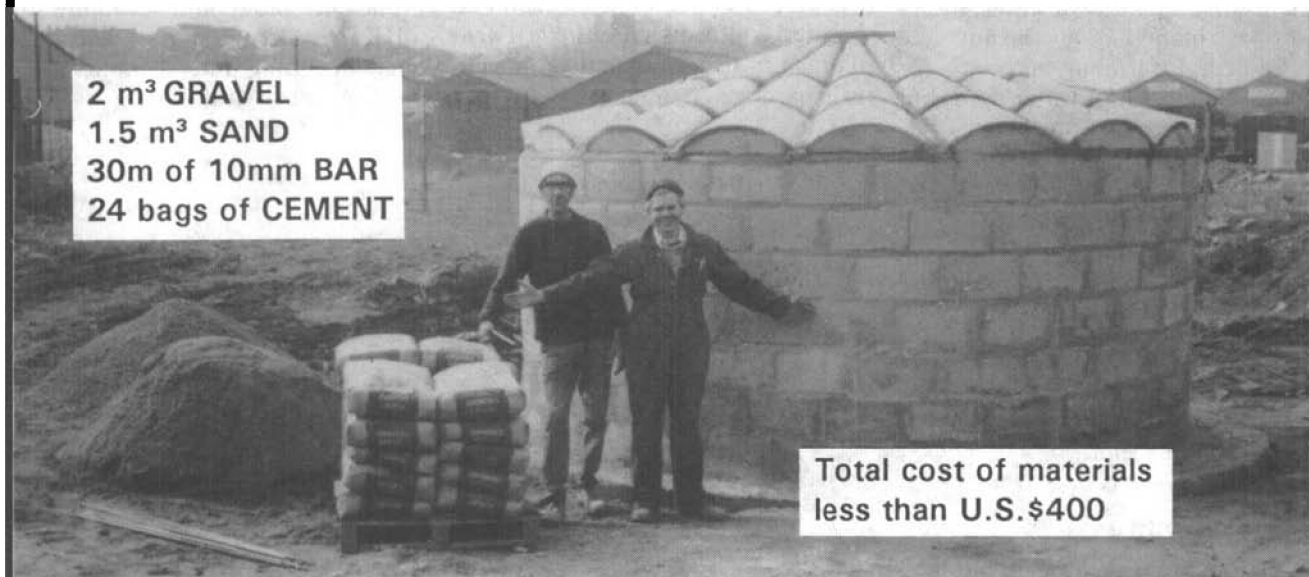
monitoring the quality of water. We have not given priority to the removal of pathogenic germs and toxic substances from drinking-water. Issues are still seen in terms of development versus pollution.

### Co-ordination needed

There is no co-ordination between the various departments and agencies concerned with water. The Departments of Irrigation, PHE (Public Health and Engineering Department), Groundwater, Geology, Meteorology, Health, Soil Conservation, Agriculture, Forestry, Co-operation, and bodies like the CGWB (Central Ground Water Board), research institutes, drilling agencies, and non-governmental organizations never come together to draw up common strategies of water management. It is time to think of constituting in every state, and also at the Centre, a statutory body like the Water Programming Board on the lines of the State Geological Programming Boards, with members drawn from all the departments and agencies concerned with the use of water and its management. Such a body is needed not only for

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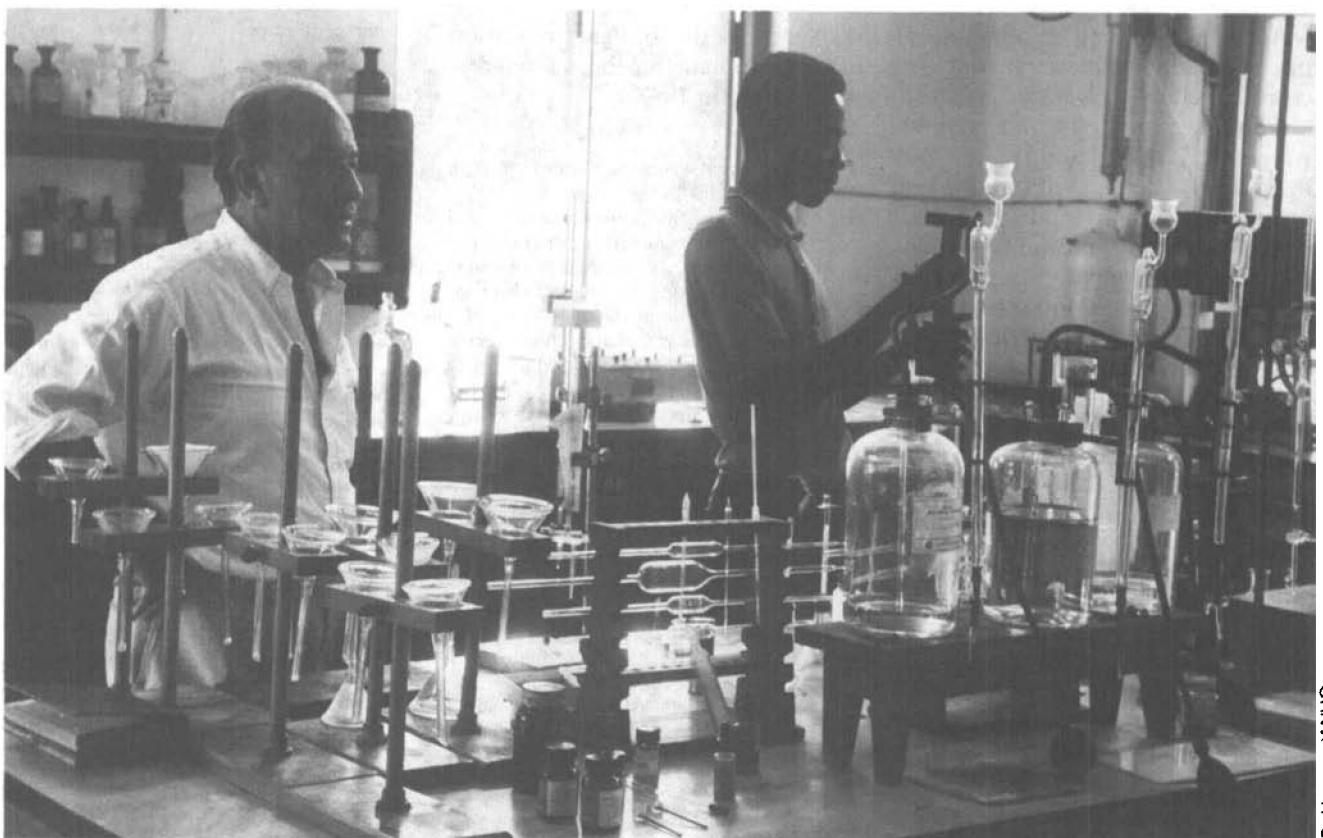
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*No single laboratory in India is equipped to test water for all the elements in WHO guidelines. Central co-ordination could channel funding into creating the well-equipped water-quality testing facilities which are so desperately needed throughout the developing world.*

co-ordination, but also for preventing the solutions of one department from becoming the problems of others. Perhaps NAWDA should take a lead in promoting this solution to the state governments.

Many states do not have any kind of water legislation. As DMG, Karnataka, I sent draft groundwater legislation to the Government in 1985; it is still (1990) under consideration.

The quality of surface water is also worsening in some areas. There is no flow in rivers like the Uttara Pinakini in Karnataka even during the monsoon season. Will this have an effect on the quality of water? When the water does not flow, the flushing of salts will not take place; what will be the effect on the quality of the water and soil? How is the increasing use of fertilizers and pesticides affecting the quality of the water? Is the chemical profile of the water changing? Studies of the Great Lakes in North America have shown that their waters are becoming acidic. What about our lakes and reservoirs? There are many questions but no co-ordinated research to find the answers.

### **Conserving water**

The position, then, is that India's population is growing at the rate of 2.4 per cent annually. By the year

2000 the population is expected to be between 952 million and 1052 million. We know our water resources: the CWC's estimates are that we receive 400 million hectare metres (mham) of rainfall annually, of which roughly 86.5 to 92.7 mham is available for exploitation; with better technology and recycling, this figure can go up to 105 mham.

### **Water strategies**

As the population increases, per capita availability of water will decrease. More water will be required for domestic use, sanitation and industry. The Expert Committee constituted by the Government of India at the instance of NABARD has recommended allocating 85 per cent of water for agricultural use and 15 per cent for other uses. But there is no system to properly manage these water resources. As choices of use become critical and pollution becomes a major issue, more attention will have to be paid to water management, by creating regulatory and monitoring bodies with statutory powers.

For industrial and many kinds of urban use recycled water will have to be used. But even in a city like Bangalore, there is no waste water treatment. Raw sewage is dumped into the Vrushbavathy, which is a

tributary of the Kaveri, and the conservation and recycling of water get little attention. As long as it is cheaper to be profligate with water, industrialists will not bother about conservation and recycling. The issue, therefore, is one not only of availability of water but also of its management and economics. The issue of supply begs the question, 'At what price?'

Faced with water shortages, talk is of the 'development of viable technology for rainfall modification' (in the words of Dr Rama); or of 'freezing groundwater in joints and fissures in consolidated rock aquifers' to increase the aquifers' storage capacity and the yield of wells, because freezing water expands and this would open up existing joints and fissures (as put forward by David J. Burdon); or of transporting Brahmaputra waters to Rajasthan and linking the Ganga to the Kaveri. All these have been mentioned as possible solutions to India's water problems.

It may, however, be more practical to begin with actions like restoring the existing tanks, protecting the vegetative cover, improving the dry-farming techniques, conserving soil and moisture by protective bunding, introducing sanitation systems which use less water, compelling industries to use recycled

water, and adopting an agricultural price system which encourages crops which use less water.

The role of pricing in determining water use in agriculture has not been given adequate attention. For example, Punjab and Haryana, which were not traditionally rice-growing areas, have changed over to rice from millets and other crops because rice is assured of a good price by the price support system. The result is that the demand for water has gone up in these states, with environmental consequences.

While many of these actions have to be taken by governments, many also require the support and involvement of non-governmental and voluntary organizations. For effective water management, people's involvement is necessary.

In conclusion, I can do no better than to quote from the presidential address of Dr Archana Sharma

delivered at the Bangalore session of the Indian Science Congress Association in 1987:

The projected water-use pattern for India in the year 2000 is:

Agriculture, including livestock and irrigation (79.6 per cent); power (13.7 per cent); domestic (3.5 per cent) and industrial (3.2 per cent) for the 1900 Mm<sup>3</sup> of water available annually.

The use under the agriculture sector would involve irrigation, which may increase from the present 39.8 to 73.8 per cent in 2000. Since the level of efficiency at present is only between 25 and 30 per cent, drastic changes must be made in the methods of water use in irrigation.

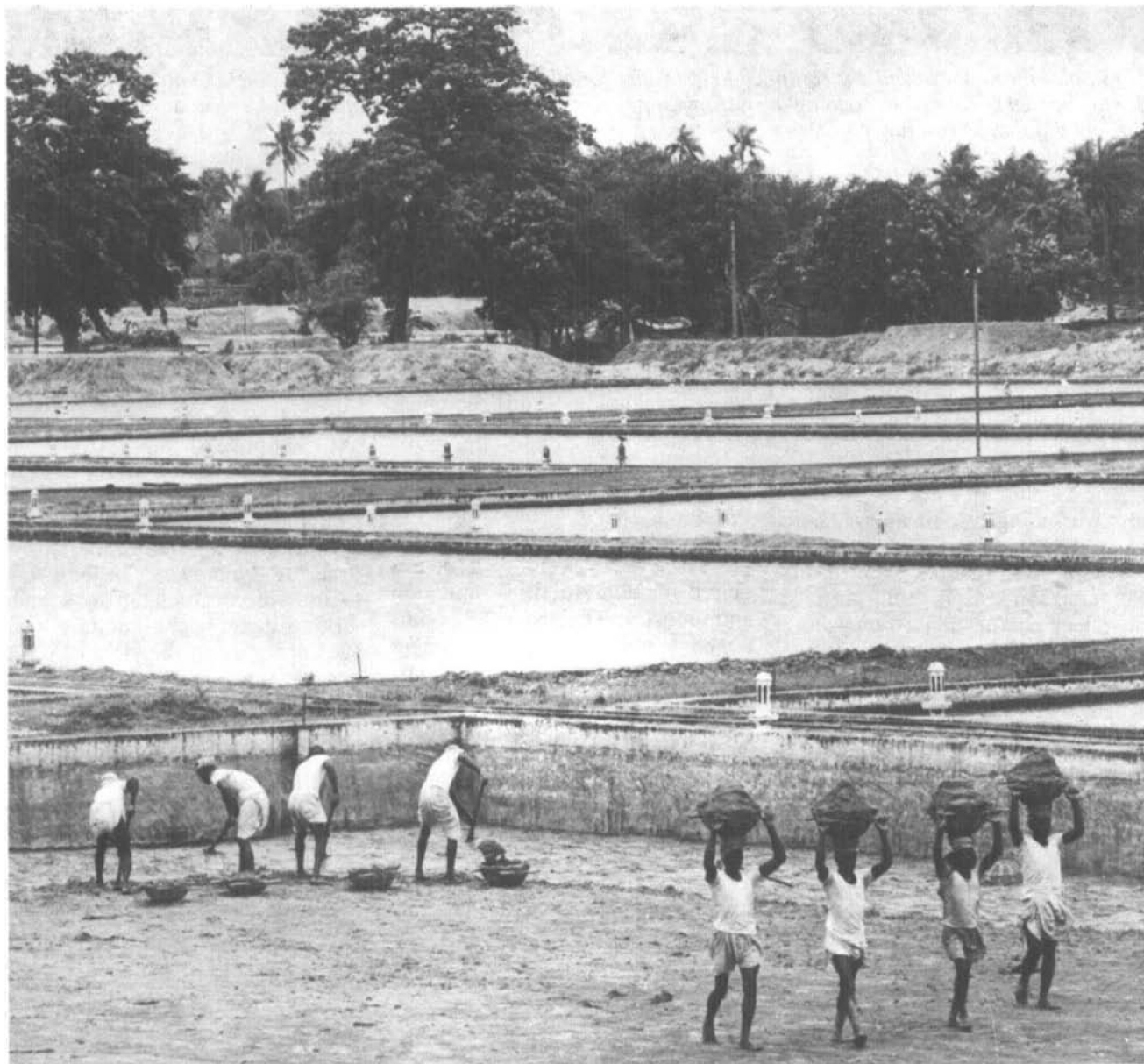
More than half of the water available annually (1092 Mm<sup>3</sup>), will be lost because of inadequate management and pollution. At present 8 to 16 per cent of the waste water generated is from industry, while the domestic sector accounts for 84 to 92 per cent. By 2000 these figures will be 33 and 67 per cent respectively.

The amount of waste water that should be collected for reclamation in Class I cities and Class II towns are 41 and 84

per cent respectively, and the amounts to be treated are 64 and 94 per cent.

The vital need for a National Water Policy to ensure sustainable availability and use of water for diverse objectives . . . was stressed in the National Conference of Irrigation and Water Resources (in 1986). . . . Some aspects of importance are the need for greater inter-state co-operation, greater decentralization and the sharing of available water. The different systems of water use: surface flows, groundwater, anti-pollution measures, flood control, navigation, command area development, and hydel generation are being administered in isolation, and should be integrated under this policy.

Sustaining the quantity and quality of water is possible, provided we manage our water resources and environment wisely and with foresight, giving the subject the importance that it deserves. This is a task that cannot be left to governments alone. ●



Paul Almasy/WHO

*Much more water must be reclaimed, treated, and recycled. Here the slow-sand filters at Pulta water purification works are being cleaned.*