

# Millions in Bangladesh face slow poisoning from arsenic-contaminated water

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The international media rarely touches on the misery and suffering endured by the hundreds of millions of people in the so-called Third World who lack access to the basic necessities of life--clean water, adequate food, clothing and housing. Only when malnutrition turns to famine and diseases become epidemics do reports begin to appear, usually written in sensational but superficial terms.

In Bangladesh, a huge social disaster is developing that has received virtually no news coverage. Millions of people in rural areas are being slowly but surely poisoned as they drink from water supplies contaminated with small but nevertheless potentially fatal quantities of arsenic.

Babar Kabir, a hydrologist with the World Bank, conservatively estimates that 18 million Bangladeshis are affected. Dr Dipankar Chakraborti, who has been studying arsenic contamination for over a decade, maintains that more than 50 million people are at risk and thousands are already showing symptoms of poisoning. Others say that the figure could be as high as 75 million out of Bangladesh's population of about 120 million.

Nineteen rural districts covering an area over 500 square kilometres near the border of Bangladesh and India have arsenic-contaminated wells. Many villages adjacent to the capital Dhaka are also affected. In the neighbouring Indian state of West Bengal, an estimated six million Indians are drinking contaminated water and 300,000 are showing signs of poisoning.

The contaminated water comes from underground tube wells introduced widely over the last 20 years as a cheap alternative water supply to prevent outbreaks of deadly diseases such as diarrhea and cholera. Tube wells are steel cylinders sunk into the ground to varying depths to provide underground water for irrigation and drinking. No testing was done, however, for potential dangers such as arsenic, which is both colorless and tasteless.

At low concentration levels, it is thought to take between eight and 14 years for the physical symptoms of arsenic poisoning to emerge, but cases are appearing in shorter times. In the Bangladeshi village of Dipordi, tube wells were sunk just seven years ago yet villagers are already showing signs of poisoning.

Many victims are children who have been consuming the poisoned water since birth. According to Dr Mahmudur Rahman of the Dhaka Community Hospital in Bangladesh: 'Children under 15 constitute 45 percent of the population, which means that out of the 50 million feared affected almost 20 million are children.'

Ingesting small amounts of arsenic over long periods leads to chronic poisoning. Arsenic is normally secreted by the kidneys, but over a prolonged period of ingestion, the body cannot remove the poison fast enough, resulting in increased levels in the system.

The first outward manifestation of arsenic poisoning is melanosis or dark spots occurring on the chest, back, limbs and gums. In the more advanced stage wart-like skin eruptions develop on the hands, feet and torso, which can lead to skin cancers. Continual poisoning by arsenic results in the enlargement of the liver, kidneys and spleen which often develop into malignant tumors, lung, skin and bladder cancers and gangrene.

In the village of Samta in northern Bangladesh, a 12-year-old girl, Runu, who suffers from skin discoloration and breathing difficulties, watched her parents and two brothers die from arsenic poisoning over the past 5 years. Now orphaned and with the family home abandoned, she works as a maid and lives with a neighbouring family also affected by arsenic poisoning.

A Bangladeshi newspaper report cited the case of Amil Chandra Das, a rice farmer in the Noapara district. He developed lesions on the palms of his hands, which began cracking and bleeding--headaches, chest congestion and stomach cramps followed. Das's 16-year-old daughter recalled how her father 'finally just laid in bed all day and we looked into his eyes. Then one day he didn't open his eyes any more.' The farmer's son had died six months before after exhibiting the same symptoms. His daughter has now developed sores on the palms of her hands.

The arsenic poisoning has taken a terrible social as well as physical toll. Thousands of men, women and children with visible signs of poisoning have been ostracised in village and rural regions by friends and neighbours who thought the victims were suffering from a contagious disease. Men have been refused jobs, children have been abandoned and families have split up.

A UNICEF program for clean water

The United Nations International Children's Emergency Fund (UNICEF) initiated well drilling as a means of providing what was thought to be clean water in rural areas in Bangladesh. When the program began no water or soil tests were carried out. It is estimated that there are now five million tube wells, providing 95 percent of all water to over 120 million people. Three million wells were installed in joint ventures between the government and aid agencies and a further two million have been privately installed.

Testing is meant to be carried out on new installations but mainly takes place at government installed wells. As recently as six months ago tube wells were being installed without testing. Of the 20,000 tube wells tested so far, 25 percent have dangerous levels of arsenic, 40 percent had unsafe levels and only 35 percent were below 0.01milligrams/litre of arsenic. The World Health Organisation

recommends a level of 0.01mg/L of arsenic but the governments of Bangladesh and India regard 0.05mg/L--a level five times higher--as acceptable.

In the village of Jessore, 92 percent of 282 wells tested contained extremely high levels of arsenic. In Hajiganj in the Chandpur district, which includes over 157 villages, 93 percent of all wells were found to be contaminated. A similar picture is emerging across the country with contaminated water found in 41 out of 64 districts. The highest concentrations found so far is 1.625 mg/L or 162 times the WHO safe level.

Concerns over arsenic contaminated water first began to emerge in the 1980s in West Bengal, the Indian state adjacent to Bangladesh. Dr Dipankar Chakraborti, an analytical chemist, learned of severe health problems in a number of West Bengali villages during a visit to his parents in 1988. He took water samples and testing at the University of Antwerp revealed high concentrations of arsenic. But his warnings were largely ignored.

In 1985, Bangladesh officials were notified of increasing numbers of people crossing the border into India to seek medical treatment for skin ailments suspected of being related to arsenic poisoning. In 1993, the government in Bangladesh established a committee to look into the problem but very little testing was carried out. Chakraborti began sending letters to the Bangladeshi government as well as to UNICEF and WHO in 1994, but the dangers were dismissed.

Facing a growing health crisis, the Dhaka Community Hospital incurred large debt in order to begin its own independent testing of tube wells. In February, the hospital organised a conference to bring together international specialists and medical experts in an attempt to find solution.

So sensitive is the government to the issue that the Bangladesh Health Ministry warned the conference organisers not to include anything 'subversive' in their documents, which had to be submitted for official approval prior to the conference proceeding. Participants had to be screened, and the organisers had to vouch for those attending the conference.

#### No solutions

Despite mounting evidence of widespread water contamination, little has been done to identify the extent of the problem let alone provide any solutions. Bangladesh is one of the most densely populated countries in the world, and one of the poorest, with an average per capita income of just \$266 a year. About 80 percent of the population is rural and 60 percent are landless peasants.

The official indifference and even contempt towards the problems faced by millions was underlined by the remarks of K.J Nath, a spokesman for the All India Institute of Hygiene and Public Health. In a recent interview with the New York Times, Nath admitted that there was 'a lack of administrative support' and 'maybe a lack of political will' but then added: 'One has to be rational and realistic, India has 17 million people affected by tuberculosis, seven million affected by diarrheal disease, two million by malaria. In that context, arsenic in West Bengal is not so serious.'

In August, WHO, UNICEF and other international agencies agreed to provide funds to conduct more research and attempt to find alternative supply of safe drinking water. The World Bank has agreed to make a \$35 million loan to Bangladesh but most of the funding will be used to re-test the tube wells. UNICEF has allocated \$300,000 as part of a Development Project to provide safe water for 200 of the

worst affected villages. Another \$800,000 is allocated for research into the causes.

Various theories for the contamination have been advanced. According to one theory, overuse of the water supply has increased oxygen levels in underground waterways, resulting in higher rates of leaching from minerals containing arsenic. Other scientists say that biological processes may be involved. Last year the Bangladesh Centre for Advanced Studies hypothesised that only the upper 150 metres of sediment contained high levels of arsenic. Some experts have pointed to the long term and sustained use of pesticides and the waste products from industry as contributing factors.

But regardless of the cause, the treatment of arsenic poisoning is straight forward: the provision of arsenic-free water will halt any further physical deterioration in all but the most advanced cases. But access to this basic necessity of life--clean water--is precisely what is lacking. Neither the government nor the various international agencies have any remedies to propose. In a number of cases, the government has tested and sealed dangerous wells only to have them reopened because there is no alternative supply of water.

Dr Abdul Wadud Khan of the National Institute for Prevention and Social Medicine (NIPSON) has developed a kit to purify arsenic contaminated water. But it costs villagers the equivalent of one month's pay and would only be suitable for filtering small quantities of water. Any filtration system also raises serious concerns as to the disposal of the arsenic sludge. If not carried out carefully it could lead to soil, pond and river contamination.

Other cheap solutions and interim measures are being considered. What is striking is that neither the government nor any of the international agencies have drawn up or allocated the necessary funds for a comprehensive plan for eliminating the dangers facing millions.

There is no lack of water. Large parts of Bangladesh form a huge river delta system. Only months ago, 70 percent of the country was inundated by floods leaving tens of millions of people homeless. The latest reports indicate that rice production has been cut by at least 75 percent raising the spectre of widespread hunger and malnutrition in the coming months.

Regular flooding and droughts continually afflict the country creating disasters in rural areas. Yet the most obvious solution--a long term plan to control the flow of the rivers and water treatment plants to provide clean drinking water--remains as far off as ever. In a social system ruled by profit, the supply of clean water for Bangladesh and West Bengal, like the provision of the necessary health care for treating diseases like malaria, tuberculosis and diarrhea, is a luxury only available to the few who can afford to pay.



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