

# Arsenic contamination A threat to the nation

In the face of arsenic onslaught, the country's people face the risk of dying out. It is time to declare a national emergency. It is time to put all our resources together to ensure safe drinking water to all. Let us not let Bangladesh become another killing field, writes Navine Murshid

## A deep sigh...

THE locals eyed it with suspicion when water from the underground wells first bubbled up about a generation ago. The government with the help of aid agencies sunk hundreds of thousands of wells into the floodplains of the river Ganges to irrigate crops during the dry seasons. They called it Satan's water.

Now thirty years later, their name for the water has proved right. The water carried a hidden poison -- arsenic -- that slowly ate away their bodies.

The poisoning is cumulative. Tiny amounts of arsenic slowly build up in a body to produce physical symptoms like melanoma, skin lesions and a form of gangrene. Little by little, the metal accumulates in a protein in the skin. It slowly poisons the tissue until the cell cannot function properly. The spotty skin took ten years of drinking arsenic-contaminated water to develop. At this stage the symptoms are reversible. But, when a person continues to ingest arsenic, the skin begins to develop sores and develops into a fatal cancer.

It's difficult to know how many have died or will die because of arsenic poisoning, but our nation may be dying. There is an irony here.

In the 1960s, the hand pumps or "tube-wells" were set up to prevent huge numbers of deaths from disease caused by contaminated surface water. Today, 97 per cent of the country uses these pumps. But, the well-meaning effort came with a hidden poison. Bangladesh is a tragic example where tube-wells were sunk for drinking water to replace poor quality shallow ground water and surface water sources. Today, our development partners are looking for ways to turn back to surface water for drinking purposes.

It went wrong in the beginning. Not enough tests were done before recommending groundwater for consumption. Some very basic tests, including ones for detection of pathogens that causes diarrhoea, were done. For drinking water, such risks are only taken in areas, which are sparsely populated so that, in case of any disaster (as now), the population could be taken care of with sufficient medical attention. Today, we are having to pay the price.

## Some possible explanations...

Naturally occurring arsenic in the bedrock is seeping into the drinking water. Questions still remain, but one explanation is that too much water is being pumped out from underground. When the water is continually drawn out, the water level drops and allows the air to rust certain rock. When the rock oxidises, arsenic is released and seeps into the water.

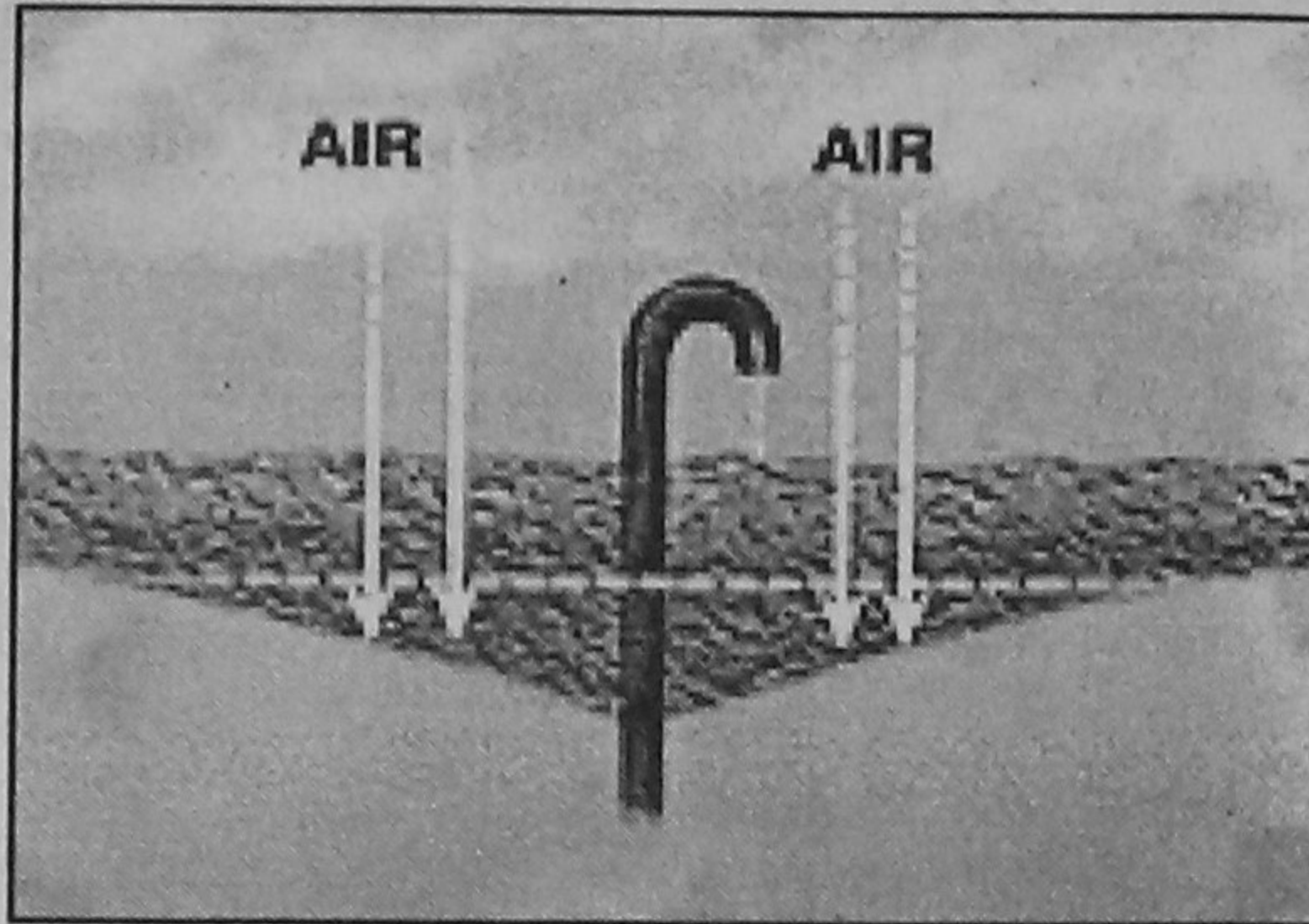
Ironically, water is pumped out in such large amounts to fend off massive famine. As part of the Third World's "green revolution" in the sixties, underground wells were dug to irrigate the crops during the dry seasons. Now, the fields are yielding new varieties of rice and wheat in abundance.

But while food is now plentiful, safe drinking water is not... The Geological Survey of India suggests that fertilisers may be responsible for presence of arsenic. The increasing use of phosphate fertilisers might play a part. They believe that when phosphate and arsenic compete with one another in the ground, arsenic is displaced out of the soil and can leach into water supplies. Phosphates also encourage the growth of bacteria, which helps to release arsenic.

## Who?

Two government departments in Bangladesh and four international organisations are facing legal proceedings for allegedly failing to protect the population.

Much of the country's drinking water comes from wells sunk



How arsenic is released when water is pumped out using tube-wells

by agencies working for the United Nations.

But a Bangladeshi MP, Rabeya Bhuiyan, has accused The World Bank, the United Nations Children's Fund, the World Health Organisation and the United Nations Development Programme of failing to protect the water supply.

Some well water contains so much arsenic that an adult drinking four litres a day could start to show signs of poisoning within a couple of years. Arsenic can damage most of the body's major organs and the immune system. It may also cause loss of energy and fatigue, stomach pain, nausea, vomiting, and watery or bloody diarrhoea, thickening and discoloration of the skin, which could lead to skin cancers, and numbness in the hands and feet. Some people may be affected by lower levels of arsenic than others like young children, the elderly, people with long-term illnesses and unborn babies.

Experts estimate that half the people in Bangladesh -- 85 million individuals -- are slowly being poisoned.

A case against the agencies involved in sinking the water wells over the past two decades is due to be heard shortly by the Bangladesh Supreme Court.

## Hats off to capitalism

With the discovery of arsenic in drinking water there seems to be a missionary zeal in the development of kits, as if arsenic in water is a new phenomena. Millions of dollars are pumped in for this consumable obviously meant for business and guinea pig experiments. After all, had this been possible (for a reliable low cost effective "arsenic marker") then instrument manufacturers would not have spent millions of dollars every year for refining trace metal analysers like AAS, stripping Voltametry or ICPS-mass spectrometer.

As it is now proved that 70 per cent of the people are already affected with arsenic, tube-well water in Bangladesh should therefore be considered unsafe. Also, instead of spending money on the arsenic screening, the funds should be diverted to find out alternative sources of water and for the development of water filters to treat tube-well water.



In absence of alternative sources of drinking water, people are using water from the 'red' marked tube-wells. Shapania, Barisal.

## What is being done?

The government, the opposition parties and development partners do not seem to be aware of the magnitude of this catastrophe. No party has arsenic mitigation on its agenda. No one talks about it. A national campaign that was started last year saw no end results. A screening programme was planned whereby, tube-wells were to be tested for arsenic, arsenicosis patients were to be identified and referred to health centres, and communities were to be educated about short-term options to ensure safe drinking

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## "The death toll is likely to rise"

Alamgir Faruq Chowdhury, Health Secretary, GOB

**The Daily Star (DS):** What have prevented the Government from declaring the catastrophe a National Emergency?

**Syed Alamgir Faruque Chowdhury (ALFC):** Basically, we are very concerned and are treating it very urgently. We understand that this is a time for urgent decisions and actions. We feel it is an emergency. But why the government is not declaring it a National Emergency, I do not know. This is a policy decision. The LGRD or the PMO can answer this. I agree the situation today is very bad. Perhaps, it is time to call a national emergency.

**DS:** Why isn't arsenic contamination an agenda in the government's election campaign?

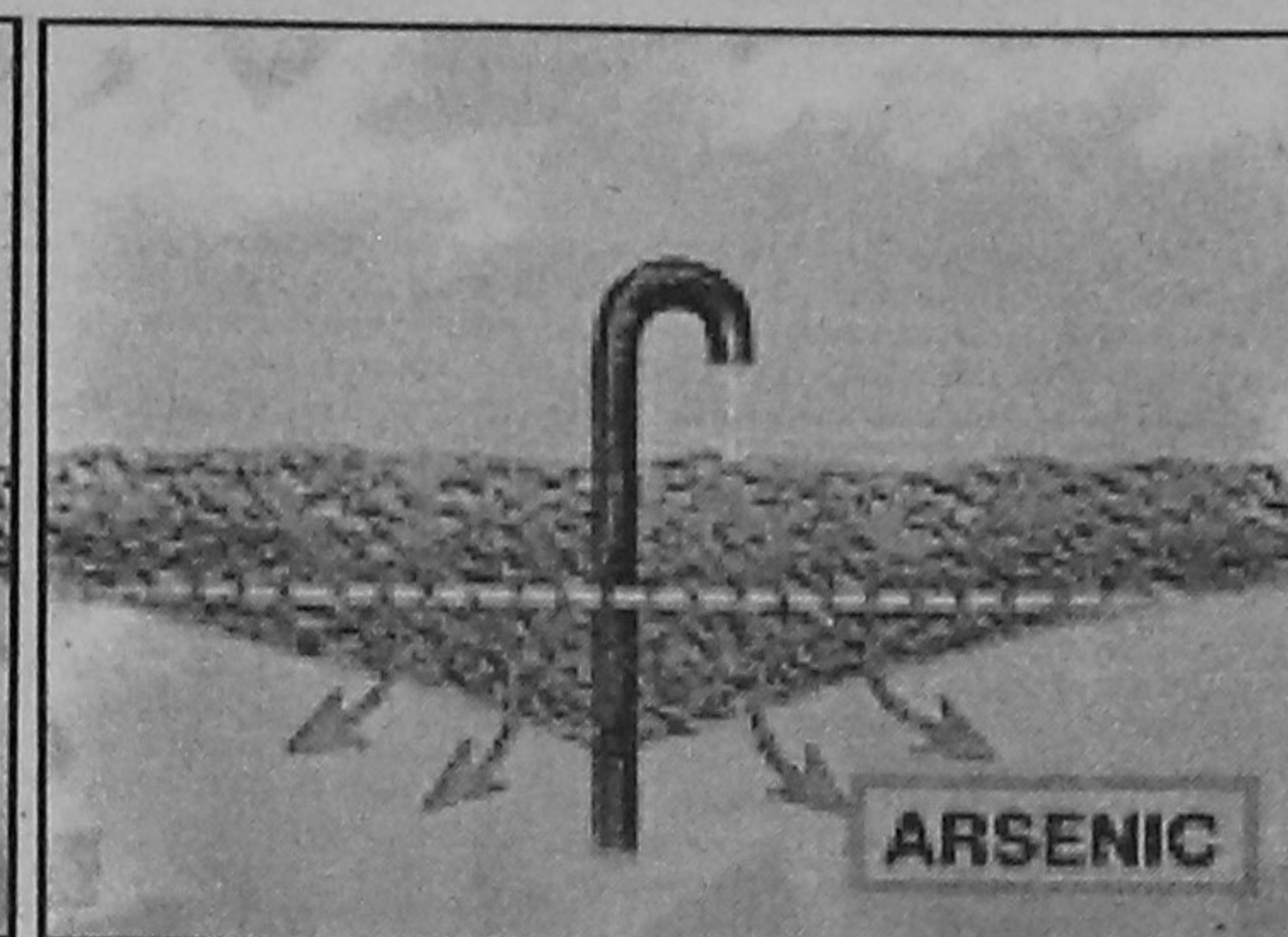
**ALFC:** I am at a loss. This is a political decision - a decision that hardly depends on me.

**DS:** A screening programme that was planned last year had assured people of both short-term and long-term alternatives to drinking tube-well water. What happened to that?

**ALFC:** We certainly need alternatives to drinking water. But that cannot be provided overnight. The supply of water falls under the LGRD. For them, I can say they need time. We, that is the health ministry can step in only to help the ill: see to the health factor, provide medicines and the like.

**DS:** How reliable are the kits that are being used to test water?

**ALFC:** I've heard that some are not reliable at all. Many kits have been made available to the market. Some cheap and effec-



water, including rainwater harvesting, boiling water from ponds, and other simple arsenic-removal techniques, while longer-term sustainable options are developed.

UNICEF continues to sell test-kits, which have, at different times, given different results. Fifty-five thousand tube-wells have been sunk within the last few months without verifying whether there is arsenic or not. Some of the results are even being misleading, triumphing over women using kits to test arsenic. The issue is not women's empowerment. The issue is death... death from arsenic contamination. It seems everyone is at a loss and they hope the problem would go away if they keep their eyes shut. And the people are having to bear the brunt.



Rain water harvest through use of rain-water jar can provide arsenic free water. The question is, can it provide water free from germs and bacteria? Such cement jars do attract such parasites.

## Questions Unanswered

The depth of the problem remains unknown to most. There are concerns whether there are possibilities that arsenic may enter the food chain. There are suggestions that cows drinking arsenic contaminated water give arsenic contaminated milk. Then what about cows' meat, and for that matter, meat of the other animals that we eat? What about fishes? The list goes on.

Also there are discrepancies regarding when arsenic was first



Arsenic Poisoning: Arsenic is often found in metal ores

detected in Bangladesh. While some say it was first found in Chandpur in 1984, there are statistics which say it was found in 1991 and 1993.

It is interesting to note that Arsenic was branded as 'human carcinogen' in 1985. Why did it take us so long to realise where we had wrong?

There are allegations that Bangladeshi masses are being used to test the effect of metal on humans -- a conspiracy of the west. Others point fingers at our neighbour, India, calling the Farakka dam the root of the evil. Also, the community water suppliers (here DPHE) were not advised by their collaborators and advisors to regularly monitor water based on some standard protocols. Why it wasn't done, is still a mystery.

Researchers are coming here in numbers for the PhDs. Is this the whole idea about?

## Call for a National Emergency

There is no more time to waste. This mass-poisoning has to stop. And it has to stop now. The death penalty has to be reversed. Today we are in a position much worse than Chernobyl, much worse than Bhopal and definitely much worse than the 1998 floods. The people of Bangladesh proved time and again that united work and diligence is the key towards a bright day. The test confronts us again. A test we must pass if Bangladesh is to remain a country on the world map.

We urge the government to declare a National Emergency; declare that Bangladesh water is unfit for drinking purposes. We must not waste time screening tube wells when it is more than concluded that the underground water is poisoned. It is time to move away from underground water. It is time to focus on saving lives and providing drinking water to the people. By the time we have finished testing every tube-well in the country, thousands more would fall prey to arsenicosis. We cannot afford that. All our resources need to be put together to combat this fight against death. We urge Bangladeshi scientists, home and abroad, to work together and find solutions. We urge all Bangladeshi expatriates to 'adopt' their home villages and ensure changes. We urge all Bangladeshis to help in whatever way they can to stop this mass killing.

We need alternative sources of drinking water. We need to know that no more people would die due to arsenic. We need to know that those affected are getting proper treatment, proper care and can live to see the days in front of them.

This is not the time to wait for what the concerned authorities are saying. That period is long gone. And they have failed us, at least to a certain extent. The situation demands attention NOW. The World Bank and the UNICEF have assured us of financial support. The question is not of funds anymore. It is of actions. **Thirty years from now, we do not want to hear that we made another 'mistake'.** Let's not turn Bangladesh into another Killing Field.

## 30 years from now, another mistake?

Chinmoy Mutsuddi, Media Consultant, UNICEF

**The Daily Star (DS):** What plans do you have to mitigate arsenic contamination?

**Chinmoy Mutsuddi (CM):** The arsenic mitigation programme has been going on for two years in two categories: safe water options and health management in five thanas, namely Bera (Pabna), Kochua (Jessore), Sonargaon (Narayanganj), another two thanas in Chadda and Manikganj.

**DS:** What are the safe-water options that UNICEF has undertaken?

**CM:** We have pond-filter programmes, rain water harvesting, dug and ring well and kolshi filter, which is a very indigenous, effective and cheap method.

**DS:** In rainwater harvesting, how have you taken precautions against spoilage, bacteria and other germs?

**CM:** The jars used have lids to prevent germs from entering. We are also introducing filters that can filter arsenic and ensure arsenic free water. In the filters we are using sand, iron filings, brick powder etc. This would certainly ensure pure drinking water. At times, we are even providing these free of cost.

**DS:** Would you say this is a foolproof method?

**CM:** Definitely. We are testing the filtered water using both field test and lab test and we have seen that it is free from arsenic.

**DS:** At the recently-concluded Arsenic Conference, the UNICEF country representative Shahida Azfar implied that the situation in Bangladesh is ambiguous. Does this also imply that we cannot solve the crisis?

**CM:** Research is going on at length. We are still unable to say. There are no conclusive statements. We do not understand why two members of a family who have been exposed to arsenic for the same period of time show different symptoms. About whether we can solve it, I would say it's not a question of crisis. We need time. Nothing can change overnight.

**DS:** But, within this time, thousands more may die of arsenicosis.

**CM:** Not necessarily. We are providing alternatives to tube well water. We are also telling everyone to drink water from the 'green' test tubes. We are telling them to use pond water. And we believe we are being able to reach out to everyone.

**DS:** In absence of alternatives, there are still people drinking water from the 'red' tube wells. What about them?

**CM:** We are creating awareness as much as possible.

**DS:** The kits that you are using have proved to be unreliable. There are only three scientific ways to actually test arsenic in drinking water. Why are we still using that?

**CM:** I disagree that the kits are unreliable. Out of ten, perhaps, one may be a little defective, but I have not heard of any complaints. We are using mark kits, which is the best one here. If more advanced kits become available, we'll use that too. As for the three scientific methods, scientists would know.

**DS:** Don't you think that instead of 'wasting' resources on kits, we should be focused on providing safe drinking water only?

**CM:** We are giving the people options. But at the same time we have to conduct tests to find out which ones are affected and which ones are not. Our ultimate aim is to provide safe drinking water.

**DS:** Why did it take so long to recognise this problem? After all, arsenic contamination has a history in other parts of the world. It was declared a human carcinogen in USA way back in 1985. Yet, UNICEF found out about it in 1993. During the 'tube-well' campaign, why wasn't this checked?

**CM:** At that time we did not have the information. Let's say you have a stomach pain. I as a doctor would first see what's wrong with your stomach before checking whether something is wrong with your heart. It is something like that. At the time, experts decided what should be done. We did all the tests that we thought were necessary. Although arsenic has a history, we did not feel it would threaten Bangladesh. After all, there are geological differences between countries.

**DS:** A UNICEF feature focused on village women using kits to test water for arsenic. Isn't this a little misleading? After all, the issue is arsenic, not women's empowerment.

**CM:** Grameen is working in Kochua and BRAC is working in Sonargaon. Grameen is basically about women's empowerment, and therefore a story on Grameen would be about women. It is encouraging that women are coming out to test water. We have focused on men for the past two years. Now we are focusing on women too. This shows that they are concerned too.

**DS:** Do you think it is time to call a National Emergency?

**CM:** This is a policy decision. We have not decided anything on it yet.

**DS:** Thirty years from now do we have to hear again that we made a mistake?

**CM:** How can we answer that? Only scientists and futurists can say what would happen thirty years from now. We are doing what we can.