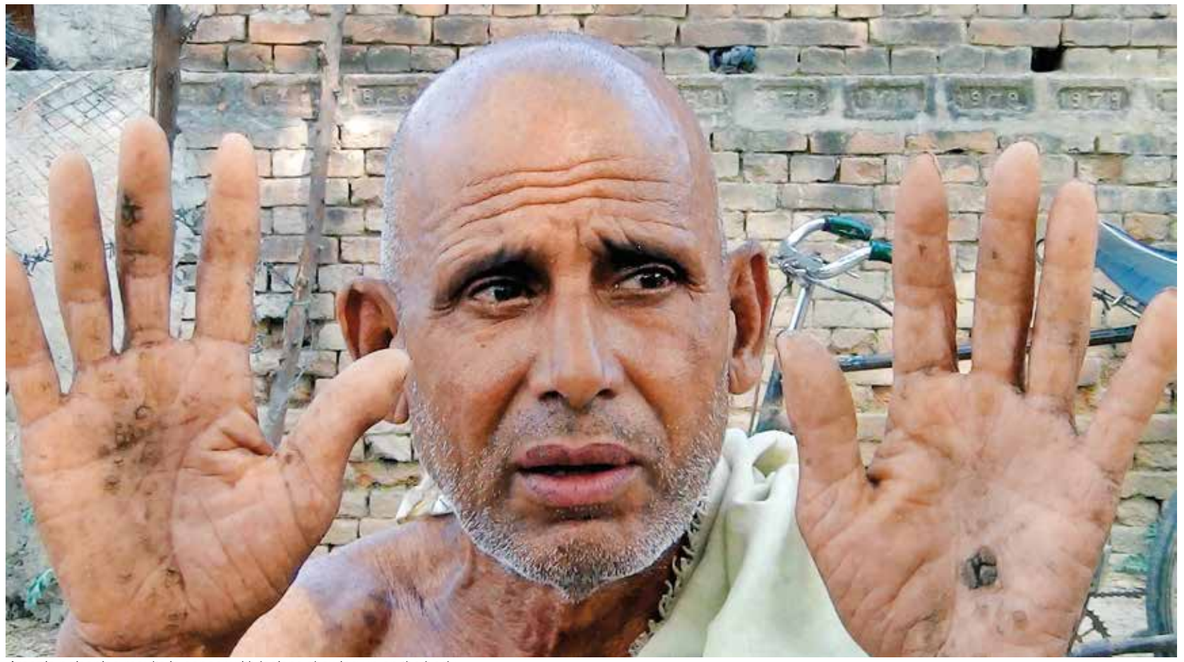

Arsenic poisoning results in cancer with lesions showing up on the body

LINGERING CURSE OF ARSENIC

Gangetic belt villages suffer as before

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MORE than 15 years after it was first identified, arsenic in drinking water remains a serious danger to public health in villages across the Gangetic basin.

Inner Voice, an NGO which has been participating in research on the problem, says recent surveys undertaken by it in Bihar and Uttar Pradesh show that nothing much has changed.

Communities continue to drink water that contains unacceptable levels of arsenic in the absence of safer sources of supply. Tests have revealed that children are exposed to arsenic-contaminated water not just in their homes but also in schools where the problem could be more easily addressed.

Arsenic as a toxin is instantly fatal in large doses but when ingested in small quantities in water and food it manifests in diseases over time. This is especially so in people who have poor nutritional levels. Children who are being exposed are being affected for life.

Incremental ingestion of arsenic causes cancers of the liver and gall bladder. It results in cancer of the skin, visible as lesions. It triggers neurological disorders such as the deadening of nerve ends or sensory neuropathy. Motor functions also get affected.

"A civilizational crisis is brewing because millions of people are at potential risk of arsenic poisoning. Nearly 200 districts are affected in the Gangetic belt. Major areas that have been contaminated are 30 districts of Uttar Pradesh, 18 districts of Bihar, four districts in Jharkhand and 14 districts in West Bengal," says Saurabh Singh of Inner Voice.

Inner Voice has twice been to the National Human Rights Commission (NHRC) on the issue of arsenic poisoning and also won compensation for children who have been exposed to it.

But Singh laments the lack of administrative will at the state government level to deal with the problem. Political parties prefer to live in denial rather than roll up their sleeves and look for solutions.

> **'At the state level contracts awarded to make the switch to piped water are mired in corruption and nepotism,' says Saurabh Singh.**

Containing the problem requires vigorous awareness building, testing of water samples and a switch from groundwater to piped supply of surface water. Community engagement and action are needed.

Unfortunately, awarding of contracts to make the switch to piped supplies has at the state level been mired in nepotism and corruption. Few efforts, if any, are made to rally people around for the sake of their health.

"We have tracked the functioning of the Department of Drinking Water and Sanitation (DDWS) in every state. There is inadequate evaluation and monitoring of the work that is supposed to have been done," says Singh.

At the central level, however, there is a greater sense of resolve and purpose after Prime Minister Narendra Modi announced the Jal Jeevan Mission (JJM) from the ramparts of the Red Fort in 2019, saying there would be a tap in every home.

In the arsenic-affected areas, many measures long proposed by NGOs have been adopted. There has also been consultation with activists to have a better understanding of ground realities.

"When we used to talk of water harvesting and use of dug wells as opposed to deep tube-wells, district and state officials would laugh at us," says Singh. "But now these very measures have been adopted. Water testing kits in villages and awareness campaigns have also been introduced."

"We complained about the poor performance of Bihar and Uttar Pradesh under the Jal Jeevan Mission. We asked for a White Paper. But if the authorities kept silent it was not as though they weren't listening. On many occasions, when we reported false information in official campaigns in social media, those campaigns were withdrawn. They requested us for a copy of the NHRC order of monetary compensation and sent it to chief secretaries in the states," says Singh.

"When our second NHRC order was out about children drinking poisonous water from school taps, they immediately passed an order to install ROs (reverse osmosis water filtration systems) in all schools and *anganwadis* in the country. When the mission director of JJM engaged with us in a conversation about ground realities, I told him about the absence of water testing facilities. Soon they sanctioned 2,200 laboratories."

"We have travelled to arsenic-affected areas in Bihar, West Bengal and Uttar Pradesh. Everywhere it's the same story. There are many 'widow villages' in arsenic-affected areas where the men have died. But there is hardly any concern shown by the government for those families," says Singh.

On the whole, he is cynical about government initiatives. Earlier DDWS initiatives were left to contractors and poorly supervised for meaningful results. Now under JJM, public-private partnerships for providing piped water to homes are creating assets that no one really owns, he says. He wonders what will happen to the piped water facilities after 30 years when the PPPs expire.

"It is important to make water a community asset in arsenic-affected areas," says Singh. "People need their own shallow wells, water harvesting systems and testing facilities that will not only save them from arsenic but also reinforce a central role for clean water in their lives."

In the absence of community efforts and inadequate government reach, people are forced to fend for themselves with whatever they can get.

"I visited a village near Basirhat in North 24-Parganas district in West Bengal after 10 years and found villagers buying water to drink in nearby markets. You could say that is the only change I saw in their lives," says Singh.

Why is arsenic showing up in drinking water in these parts of the country? Geological changes over centuries have resulted in bands of arsenic deposits in the Gangetic basin.

Overuse of groundwater with tube-wells going deep in search of reserves has resulted in disturbing settled geological structures and caused arsenic to leach into aquifers.

In the 1960s and '70s the World Health Organization (WHO) and UNICEF propagated the use of groundwater in their quest to make water used for human consumption safer. As a result, tube-wells came to be installed in ever-growing numbers. Use of groundwater became rampant for agriculture and human consumption.

Singh's interest in arsenic poisoning arose when he returned to his village in Ballia district in Uttar Pradesh. It was particularly badly affected.

Saurabh Singh, centre, and his wife Merra, left, with residents of Karkatpur village at Ghazipur in Uttar Pradesh

The late Dr Dipankar Chakrabarti

He went on to work closely with Dr Dipankar Chakrabarti, head of the School of Environmental Sciences in Jadavpur University, Kolkata.

Dr Chakrabarti made a seminal contribution by identifying arsenic in drinking water as a major public health issue in West Bengal — something the state's political class pilloried him for and refused to accept for a long time.

Dr Chakrabarti also expanded his research to other states in the Gangetic basin. A study led by him in 2014 in five blocks of Patna district showed levels of arsenic beyond the acceptable 10 parts per billion (PPB) in water samples taken from 1,365 hand-pump tube-wells.

Of the 712 villagers examined by the study's medical team, 69 had skin lesions as did nine of the 312 children screened. All the biological samples collected had arsenic levels above normal. Arsenical neuropathy was observed as were obstetric problems.

Dr Chakrabarti, who died in 2018, was an iconic figure in environmental research in India. A tall and dynamic chemistry professor, for all the gloom uncovered, he was cheerfully disposed and did yoga twice a day.

He conducted the first serious urban air pollution tests in the country in the 1980s, collecting samples on the streets of Kolkata and testing them at advanced labs in universities in Europe where he would teach in those years. He was way ahead of other pollution control scientists in identifying diesel and other automobile emissions as a public health issue.

Dr Chakrabarti had the courage to take on the establishment and ring alarm bells where required. For Patna district, his study recommended safe sources of surface water for drinking and cooking, and a rigorous campaign to make people aware of the dangers to their health.

Such measures remain the only real ways forward. But they require governments to galvanize large efforts. NGOs can raise flags of concern and create some awareness. But to make a real difference, governments must intercede and deploy the enormous resources at their command. The arsenic problem needs to be seen as a national public health concern. Right now, despite the scientific data available and efforts of activists, it isn't getting the scale of attention it merits.

One reason is that governments don't have the empowered expertise to deal with environmental problems that have public health implications. Ministers and bureaucrats fail miserably when they try to wrap their heads around such scenarios and scientists employed in government either don't know better or lack the agency to speak up.

An example is air pollution, the cause of innumerable illnesses in urban India. It has taken years of lobbying and fighting of court cases for air pollution to be seen as the hazard that it is. The challenge is even greater with arsenic in drinking water because the people affected are poor and in villages in remote parts of the country. They are easily overlooked. Activists and scientists who speak for them therefore do a great service. ■