

Aquifers help pump out fluorosis

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Bahadra (Dhar, Madhya Pradesh): Tribal children with stained teeth, some with skeletal deformities, walked past a yellow-painted hand-pump. They filled water in plastic bottles from a white water-tank on a sunny morning while going to their school in this village. They have been doing this since a long time and as a result, the residents of this village have been suffering from fluorosis for the last two decades. But now, thanks to an amazing innovation, children here are now aware that drinking water from a yellow hand-pump is not safe.

It's a rural innovation of using shallow aquifers, with locally sustainable technology, community participation and successful convergence of efforts of independent organisations and state public health engineering department. This has created awareness and transformed the lives of tribal inhabitants of Bahadra and a number of other villages of Dhar district where fluorosis has already taken considerable section of rural population under its grip.

Like in Bahadra, which has six hand-pumps, the problem of fluorosis emerged in the villages of Dhar when the hand-pump technique was introduced as a solution to the water scarcity in the drought-prone district. Each of the 1,452 villages have five to six hand pumps and studies have pointed out that water in 61 per cent of the total hand-pumps in the district are highly contaminated with fluoride content above the safe limit of 1.5 Part Per Million (PPM). Complete dependency on hand-pump for fetching has led to emergence of fluorosis and signs of fluorosis to varying degrees are visible in many villages in the district.

Bahadra village is now a silver lining as about 67 tribal families here now have access to safe drinking



WHEELS OF INNOVATION: The rural innovation of using shallow aquifers has transformed the lives of tribal inhabitants of Bahadra and a number of other villages in Dhar district where fluorosis is rampant



water —thanks to the community's efforts for innovation that has addressed major issues of fluorosis.

"Now, we know about fluorosis. We don't drink water from hand pumps which are painted yellow," says Ganga Bai, a villager, who was used to fetch water from the village hand pumps for many years, without knowing that she was bringing fluorosis to her family. "Now, I have a water tap connection. I get safe water," she says.

The turnaround came with the tireless effort of Vasudha Vikas Sansthan, an NGO, which launched a three year programme for creating newer sources of potable water for the village Bahadra with the help of Water Aid, an independent organisation which enables

the world's poorest people to get access to safe drinking water. State Public Health Engineering Department and the administration too extended their help while the village panchayat and community joined in the efforts.

Subsequently, a major awareness campaign was launched at the village level during which the villagers were told about the harmful effects of using fluoride contaminated water, citing increased incidents of dental fluorosis in children and some instances of skeletal fluorosis that caused numerous deformities.

"Creating awareness itself was a major task as people were used to fetching drinking water from the hand-pumps and there was

no other source of safe water. Finally, an old well abandoned by the Bahadra villagers came to their rescue," said Gayatri Parthar, director of Vasudha Vikas Sansthan. Subsequently, this well was cleaned up and a tank was established for to use it for drinking water purposes as fluoride content in water is adulterated only when it is drawn from deeper sub-surface sources. The well has been equipped with such structures through which piped water is distributed to different areas of the village.

The local tribal community too played their part by forming a water service committee from among them for the maintenance and operation, realising that sustaining the availability of safe drinking water was the key to combat fluorosis and better health. Now, all the households contribute Rs 20 each every month to meet the expenses towards cost of pump operator's remuneration and electricity charges.

"It's a unique approach of using shallow aquifers with sanitary protection to ensure availability of safe water in areas with high fluoride contamination in ground water," says Dr Asad Umar, programme officer of Water Aid, which provided technical assistance, training and other assistance to 'Vasudha' and local communities to develop and run their own safe drinking wa-



water projects.

Bahadra's success motivated people in other villages to think on the same lines. As of now, 12 villages around Bahadra have developed safe drinking water sources using the same model wherein the local tribal community is taking care of operation and maintenance while 'Vasudha' is now engaged in a similar capacity. The state government has identified 197 high-fluoride affected villages for implementing a river-based scheme but it could take a couple of years for the project to start functioning. The PHE department has already constructed water tanks in many villages under the river-based water supply plan and painted them blue.



WAR AGAINST FLUOROSIS

- MP Public Health Engineering (PHE) has given colour code to all hand pumps, with fluoride contaminated as red, blue for safe, and red as non-functional. Safe drinking water sources have been painted as white and blue in the entire district.
- Fluoride contamination problem persists in all the 13 blocks of Dhar district. Fluoride contamination has been reported from nearly 30 out of total 50 districts in MP.
- MP government, Water Aid and 'Vasudha' have signed a memorandum of understanding (MOU) and also entered into an agreement for fluoride mitigation through capacity building in the villages.
- At few villages, the gram panchayat itself has taken up the responsibility of operation and maintenance of newly created safe drinking water sources while at most of the places local communities have come together to make the facility sustainable.