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WATER, SANITATION AND HYGIENE: CHALLENGES OF THE MILLENNIUM

## Arsenic awareness creation

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AN ESTIMATED 20-30 MILLION people consume water with arsenic concentrations above 0.05 mg/L (Ground Water Studies for Arsenic Contamination in Bangladesh, 2000) and are under risk of arsenic poisoning and adverse impact on health. With the huge number of people at risk and the widespread nature of the arsenic contamination (excess amounts of arsenic in tube-wells have been detected in 53 out of 64 Districts in Bangladesh), effective community participation is reckoned as a pre-requisite for a sustained arsenic mitigation program.

To test promising arsenic mitigation treatment technologies (Rahman et al., 2000), the DPHE-Danida Arsenic Mitigation Pilot Project selected 4,000 families in the fringe areas of Chaumuhani and Lakshimpur Pourashavas in the coastal region of Bangladesh. In these Pilot Areas the Project employed and trained local women to carry out a Baseline survey, to conduct an intensive awareness creation campaign, to create demand for arsenic mitigation and to install and train the users in the operation of the DPHE-Danida developed Bucket Treatment Unit (BTU) technology.

### Baseline results

(Report on Baseline Survey 1999)

30% of the pilot households are extremely poor (earning less than 70 US\$ per person per year), 37% are moderately poor (earning less than 125 US\$ per person per year) and 24% are considered to be vulnerable non-poor (close to poverty line). Criteria are defined by the UNDP (Bangladesh Human Development Report, UNDP, 1998). In general, the poorer sections of the population are the worst sufferers and among whom the arsenic problem is most difficult to mitigate due to insufficient information and knowledge, lack of resources and mal-nutrition.

45% of the respondents are considered literate based on the understanding that they have successfully completed 5 years of school and are able to read and understand a message written in Bangla.

The tube-wells are generally properly maintained and in good condition. The large majority, 96%, of the respondents use the tube-well water without any treatment for drinking.

At the start of the Pilot Project more than 50 % of the population were not aware of the arsenic problem, 85 % were not aware of the health implications of arsenic contaminated water and 99 % did not know how to mitigate the problem. Moreover, the slow pace of the adverse health

effects of arsenic obviously was a cushion to people's complacency.

### Awareness creation

Initially two workshops were held with the local government, NGOs, social elites and religious leaders to introduce planned project activities and arsenic issues. This created an enabling environment to proceed with the issues at community level. At community level the project adopted two established and popular motivational approaches with five specific messages on arsenic to facilitate behavioural changes among water users both at household and community level. The potentials of the messages were their formulation, which AMPP termed "step by step penetration process" to create a quick positive response among the people consuming arsenic contaminated tube-well water. The messages were as follows:

- 1) Arsenic is a poison
- 2) Arsenic is found in shallow hand tube-well water
- 3) It causes diseases like black spots in hands, legs and bodies.
- 4) Use arsenic contaminated tube-well water for drinking and cooking through BTU (Bucket Treatment Unit).
- 5) Arsenic contaminated tube-well water can be used for all purposes except drinking and cooking.

These specific messages were accompanied with some supplementary messages like alternative sources of arsenic free water, arsenic can not be removed by boiling the water, O&M procedures of BTU etc, and were supported by IEC (Information, Education & Communication) materials developed by AMPP in picturesque language. There is a great need of IEC materials in the field of arsenic awareness creation. No appropriate IEC materials were available to reinforce the BTU mitigation technology and arsenic awareness activities at grass-root level. So AMPP developed its own materials.

The following materials were developed:

- Poster for arsenic awareness raising.
- Operational picture poster for BT users.
- Audiocassettes: Songs in colloquial language for arsenic awareness.
- Sticker for school children for arsenic awareness.
- Slides containing arsenic messages for the viewers at cinema halls.

- Calendar for school children containing promotional messages.
- A set of flash cards (8 nos.) for courtyard meetings.

The project used the following two popular methods to approach the users:

- Courtyard meetings
- House to house visits

Courtyard meetings played a critical role in creating an environment for appropriate behavioral change necessary to mitigate the arsenic problem. Women, who play a pivotal role with respect to water management in the households, were the principal targets for this activity. Courtyard meetings provided an excellent forum for arsenic related community mobilization activities.

The overriding objective of the courtyard meetings conducted by AMPP was not simply to ensure sustainability of a system by teaching people how to treat tube-well water using the BTU, but rather to help people develop the outlook, the self-confidence and the commitment, which will ensure a sustained and responsible community effort in arsenic mitigation and beyond. The focus of the conducted courtyard meetings was as follows:

- Create awareness – causes and consequences of arsenic contamination.
- Targeting women, as the principal responsible for the family hygienic habits and main carriers of water for domestic needs.
- Promotion of arsenic mitigation technologies at household level–BTU.

To encourage active participation of women both in courtyard meetings and house-to-house visits, female staffs were employed as community workers. During the pilot phase a total of 289 courtyard meetings were conducted with 4065 participants, of which more than 99% were female participants.

House-to-house visits by field workers were carried out before and after the courtyard meetings, both as a part of the awareness raising, and to continuously monitor, follow-up, correct, and update our knowledge to improve the methodology for arsenic awareness creation and arsenic mitigation using BTU technology. In addition, during house-to-house visits each field worker filled in the monitoring card kept at the users, containing 19 parameters.

The above two approaches have played an effective role in creating social awareness through the users' mobilization and facilitated the process of conveying messages on arsenic knowledge, arsenic source, risk of arsenic poisoning, arsenic related health hazards and arsenic mitigation technologies to the target people.

The project has monitored the progress and evaluated the effectiveness and sustainability of the approaches of awareness creation applied during the Project. A positive attitude

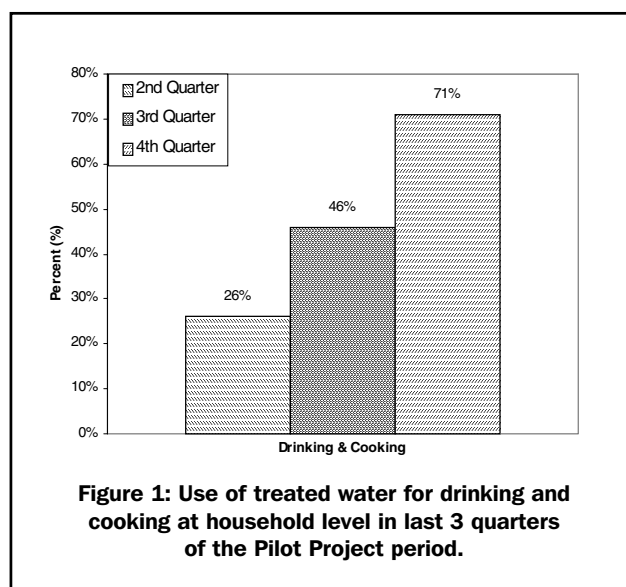
in accepting the introduced mitigation options was observed among the users and further, a behavioral change in the use of BTU treated water for cooking purposes was recorded. Regular use of treated water for both drinking and cooking purposes was used as a success indicator for BTU distribution.

Clustering the monitoring data in periods of quarters, figure 1 illustrates the behavioral change and positive development in terms of user habits of treated water at household level. Out of the households, where the installed BTUs were functioning, an initial 26% used the treated water for both drinking and cooking purposes while the remaining used the treated water for drinking purposes only in the second quarter (June to August 1999). This figure increased to 46% in the third quarter (September to November 1999) and 71% in the fourth quarter (December 1999 to February 2000). So, gradually the BTU users realized to use treated water for cooking instead of the traditional pond water.

### Large scale awareness campaigning

During 6 months of actual field level awareness campaigning a clear positive development could be observed in arsenic understanding (demand for mitigation options and changed user pattern of treated water) and in the operation of installed BTUs (arsenic removal efficiency, Rahman et al 2000). The understanding and handling of arsenic contaminated tube-well water is, however, still not sufficient and repeatedly follow-up and conveying of arsenic messages will be required over a longer period if the mitigation option shall work optimally and be sustainable.

In this Pilot Project 18 field workers were employed full-time to work with the 4,000 households or approximately one field worker per 200 households, and to make the program sustainable, several years of input will be necessary.



If the same densities of field workers are to be used and employed in larger scale implementation, the organization will be huge, difficult to control and very costly.

Probably a more feasible way of handling the problem is to engage, train and empower community volunteers in each village affected by arsenic contamination and allow them to create an income by distributing the chemicals.

### Conclusion

The observations from the Pilot Project have been positive. The arsenic mitigation techniques are effective in removing arsenic and may become sustainable at the local level. The operational cost is acceptable even to the poorest of the poor. Women as water managers at household level can operate and maintain the systems. Accordingly, the pilot project emphasized the generation of awareness among women and their training in O&M of the systems. One major conclusion from the AMPP is that for sustainable arsenic mitigation, some significant changes of the people's behavior with regard to perception and handling of drinking water are required. Further, experiences from the AMPP show that to reach these behavioral changes, simple messages formulated as a breaking news story must be given to the users repeatedly and in a varied manner.

### References

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Department of Public Health Engineering (Bangladesh), Department for International Development (UK), British Geological Survey (UK), pages 4&5.

<sup>2</sup>Report on Baseline Survey of Danida Installed Hand Tube well Users, DPHE-Danida Arsenic Mitigation Pilot Project, Bangladesh, 1999, pages iv,14-16.

<sup>3</sup>Rahman et al. 2000: Bucket Treatment Unit for Arsenic Removal, Presented at the WEDC Conference, Dhaka Bangladesh

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