

15th July 2003

From Dr. Meera M Hira Smith:

In response to Mr. Mokhlesur Rahman - "Providing safe water to school children - LGED" and Dr. Iqbal Zuberi - "Arsenic crisis in Bangladesh: good news + bad news = very bad news?"

Future of the tube wells: The 15,000 tube wells, *depending on their depth*, may get contaminated with arsenic within one year followed by installation of filters to remove the arsenic in the water. Within the following year, these filters will be labeled as "out-of-order" due to improper management, and back to square one. What a waste of funds!

It is indeed extremely difficult to say what is the best option because the options need to be suitable for the specific area.

According to my opinion the best, long-term option is distribution of water by pipelines stored in the overhead tanks. The water from the third aquifer needs to be accessed **very cautiously**, to avoid cross contamination, and pumped up to overhead tanks.

Until the implementation of such huge projects to cover the whole country the best option, for the interim period, is harvesting of rainwater. **Awareness, training and management are the three main components to run these projects successfully in the beginning.** The objective of Project Well is to make the dug well project sustainable at the village level. To make it sustainable, a team of three field staff has been involved who would train and supervise the users of 26 dug wells only for one year.

To increase the crop production during the period of green revolution methods like workshops organized by local NGOs, programs broadcasted on the radio mainly for the farmers (chasi bhaid'eyr bolchhi) were/are used to promote the use of high yield variety of seeds and the use of fertilizers and pesticides. These informative methods can be used for training the users of dug wells. As the farmers know today when to apply fertilizers and pesticides to their crops, similarly the dug well users would know how to maintain their dug wells, community or private, in few years. Rome was not built in one day.

Suggestions for the schools:

a) If there is a pond nearby, preserve it and install a bacteria removal filter before supplying water to the school tap. Many families in the villages of the district of South 24 Parganas, West Bengal, use pond water for cooking that constitutes 25% of their daily water usage.

b) Try excavating a couple of shallow dug wells using the guidelines used by Project Well and test the water for arsenic, quarterly. (Details are available on the web site (www.projectwellusa.org)). The arsenic level in water of 5 concrete, shallow dug wells provided by Project Well were monitored for one year (ending July 2003) and it was found that in all the five wells arsenic level was lower than 50 PPB throughout the year except for one which increased to more than 100 PPB in the driest months of April and May. During this period the consumers were requested to collect water from other sources that are located far. According to the users, it is worth having an arsenic safe water source that would provide water for ten

months rather than having no source at all in their locality.

Project Well is trying to assess the cause of the increase in arsenic in this particular well. Suggestions from the experts would be a great help.

The bacteria can be removed by filtering the water if the use of Theoline, a disinfectant, is not preferred.

c) During the monsoon period rainwater can be collected for drinking. There are several methods practiced in many parts of the world.

If none of the rainwater harvesting methods can be implemented then properly installed deep tube wells (refer to John McArthur's suggestion circulated to arsenic crisis group on 14th July,2003) can be an option. But extra caution need to be taken in detecting the level "deep". It is also important to **strictly supervise** the drilling, insertion of the pipes, to avoid cross contamination and detecting the safe depth.

Use of arsenic removal filters is the last option if none of the above works. There are problems with all methods suggested so far for the long-term disposal of arsenic waste.

The 'green' disposal method recently developed by Naval Materials Research Laboratory (NMRL), DRDO, Ministry Of Defence, Shil-Badlapur Road, Addl. Ambernath-421506 "A SIMPLE AND ENVIRONMENTALLY SAFE DRINKING WATER FILTER FOR ARSENIC REMEDIATION" sounds very good but who knows that the construction industries that would use the non-leachable cement blocks made from the arsenic sludge would not face the same fate as the asbestos industries are facing today.

Use of a checklist in prioritizing the methods suitable for the schools based on its location would be a good start.

Thanking you.

Dr. Meera M Hira Smith

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I think you are aware of Primary Education Development Program.

Local Government and Engineering Department of Bangladesh is planning to sink

another 15,000 tubewells on the premises of primary schools. Do you have any concrete suggestions how we can provide safe drinking water to school-going children? What are the sustainable mechanisms?

Your contribution would be highly appreciated.

Mokhlesur Rahman