

Social Aspects of the Arsenic Contamination of Drinking Water

A Review of Knowledge and Practice in Bangladesh and West Bengal

Report prepared for the Arsenic Policy Support Unit (APSU),
Local Government Division, Ministry of Local Government,
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Executive Summary

This report describes briefly the state of present knowledge of the social and socio-economic aspects of arsenic contamination of groundwater used for domestic water supply. It is based on a three-week literature review (published literature, programme descriptions or reports, and unpublished documents) and discussions with over 50 professionals concerned with arsenic.

Three types of issues are covered in this study:

1. Social, cultural, and/or economic factors influencing the impact of arsenic-contaminated groundwater consumption on people's lives, and particularly their health (for example socio-economic patterns of illness and social factors influencing health-related behaviour);
2. Social factors influencing people's response: especially in relation to other priorities, perceptions of arsenic, and social roles and relationships; and
3. Institutional and programme/project approaches to solve arsenic-related problems.

Key findings relating to health issues

Poor people are more affected than others by arsenic-related diseases.

Prevalence of skin lesions is higher among men than among women, as is prevalence of lung disease, when populations are exposed to concentrations of arsenic above 50 µg/l in their drinking water. Prevalence odds ratios of lung disease are higher for women.

Epidemiological studies are the most reliable sources of information to establish prevalence rates, but those studies in progress have not yet published most of their results. Patient surveys are useful but tend to be biased, depending on how study respondents are identified.

Women are more socially damaged than men by arsenic related illnesses, no doubt because of their generally lower social status. If unmarried, they find it difficult to find a husband; and if married they may be abandoned or divorced. Women are less likely to talk about arsenic related health problems and are more likely to attend to the health needs of others than those they themselves face.

Economic consequences of illness deserve attention. Many who are ill are either too weak to work or lose employment opportunities because of widespread fears of contagion. These problems affect both men and women and are, of course, most severe among the poor.

Some professionals consider that mental health problems, such as depression, may also result from intense social isolation or ostracism of arsenicosis patients. Such problems, however, have not been scientifically studied.

Key findings related to social factors

People have multiple urgent and competing concerns. Arsenic may not be a priority for many poor households.

There remain concerns regarding the ability of the poorest households in particular to be able to enter into cost-sharing for improved water supplies. However, at the same time, a key theme emerged of the benefits of financial contributions in improving motivation to sustain arsenic mitigation, that contributions provide poor people with some rights in relation to access to the water supply, and may reduce elite domination.

Perceptions of arsenicosis as disease remains of particular concern, since 53% of rural populations that have been studied think arsenicosis is contagious. This has major implications for behaviour change potential in relation to arsenic and suggests that more work needs to be done to improve understanding.

There is shame associated with red tubewells, which may have implications for families with arsenic contaminated tubewells. This is in contrast to pride built up over the years in having and using tubewell water, which had been considered to be safe, and which became a status symbol.

Some professionals consider that communities find health problems due to arsenic ingestion rather abstract concepts and difficult to understand, because arsenic has no taste, smell or colour.

There are problems associated with the word ‘poison’ (*bish*), which is commonly used to describe the effect of arsenic in awareness campaigns. Some people interviewed considered that this term caused more confusion than enlightenment, since its connotations are: strong smell, distinctive colour, and particular taste. Arsenic in water has none of these characteristics; nor does it kill instantly.

Social roles and relationships are even more important than individual perceptions in determining people’s behaviour – water use or any other behaviour. As domestic water use and collection are traditional and significant responsibilities of women, it is essential that women be involved in planning where and how alternative water sources will be used; however, women are not always involved to the extent that they should be.

Professionals’ perceptions of biggest challenges

Among the professionals who were interviewed, nine key broad issues were said to pose the ‘biggest challenges’:

Raising public awareness and changing water use behaviour.

Safe, affordable, and convenient alternative options and how communities and agencies should identify these.

Building self-help and community mobilisation.

Shift to community-based water sources from the familiar and trusted tubewell located at or close to the home.

Developing comprehensive, coordinated approaches to project implementation.

Including women and poor people in planning.

Staff training to build sufficient skills for public education and mobilisation.

Problems facing arsenicosis patients, both economic and social.

The need for decentralisation; and ensuring that local government bodies can provide quality support to mitigation programmes.

Two matters not much discussed in interviews are:

Why people are not sufficiently aware or motivated (except that people haven't seen patients); and

The need for socially bold and innovative approaches: social change potential in arsenic programmes/projects (for example including women, the poor, and Union Parishads)

Community mobilisation

As regards community mobilisation to cope with a local arsenic problem, a number of key points emerged:

Communities can undertake most or all of the mitigation activities required, if they perceive a need.

Careful, labour-intensive, trust-building efforts are needed if outside agents are to do community mobilisation. Special staff skills and training are needed, and much time as well.

Some programme learning points from previous experience came out in interviews, for example that it is a mistake just to test and mark tubewells without informing the public of the reason for doing so or giving people an idea of what they can do. Other learning points were: not situating an arsenic mitigation device within a private compound (*bari*) and forming a committee and obtaining local commitments to share costs before actually doing any construction or installation (in cases where local cost-sharing is expected and required).

It was suggested that more use be made of available 'social capital'. Influential people, for example, may want to help but need to learn more to identify how they could guide

their communities in solving their arsenic related problems. Such people may be very useful in engendering change, but they need guidance and information. Other people may be willing to help as volunteers, if they feel it would be in the public interest to do so.

Decentralisation

Solving the arsenic problem, it is argued, will require a return to the frequently discussed issues of decentralisation and devolution of authority to local government institutions, especially the Union Parishad. Some already are actively supporting mitigation projects, but many are not. Panchayats in India, compared to the Union Parishads of Bangladesh, have greater authority and more local resources and responsibilities. They must give permission for development activities to go on within their areas. In Bangladesh the Swiss Development Corporation is funding a new project, to be implemented by DASCOH, which is ultimately intended to strengthen the capacity of arsenic-affected Union Parishads in North-western districts (Rajshahi and Chapai Nawabganj) to engage in participatory local decision making for the betterment of their Unions.

If they had suitable resources and training, local government personnel could greatly help in arsenic mitigation in at least three ways:

1. They could join in and/or guide decision making;
2. They could coordinate local-level, externally initiated activities; and
3. They could help to arrange/facilitate water quality monitoring. A model to consider in planning for accessible and effective routine water quality modeling is the village laboratory. Twenty such laboratories are presently operating with support from UNICEF in West Bengal.

Conclusions and Recommendations

Mitigation programmes should adopt a ‘social change approach’ to their work. This will help in ensuring that the wide range of social and socio-economic issues associated with arsenic are adequately addressed and that sustainable mitigation programmes are developed.

Epidemiological studies will be very useful in assessing public health risk, but there remains much to learn about the health impact of arsenic on the total population relative to other health problems, and also about gender and poverty related dimensions of arsenic-related and other health problems.

It would be wise to distinguish two types of arsenic-related programme interventions: (1) emergency diagnostic, treatment, and social support activities in ‘hot spots’ (where large numbers of cases have been identified) and (2) prevention-oriented activities in arsenic-contaminated areas, where no patients have been identified.

Promote local, regional, and national information sharing among all stakeholders. Local and regional information sharing is very weak at present.

The public should be as well informed as possible, and people should be encouraged to discuss the issues they perceive to be related to arsenic in groundwater.

Knowledge Gaps

Girls are missing from many patient surveys, and there is almost no knowledge of their experiences, burdens, or other social factors in relation to the arsenic problem.

Actual priorities of people in affected areas should be investigated through PRA types of studies.

Dietary habits and nutrition's influence on arsenic-related illness need further study.

The different roles of women and men, and the attitudes of both men and women towards about women seeking health care – both need further study.

Gender differences in arsenic-related illness will be revealed in epidemiological studies: differential risk factors and age-adjusted prevalence odds ratios deserve close attention.

§ Practical and Strategic Recommendations

In 'hot spots' there is a need to emphasis services, not studies.

Experiment with local level water quality testing.

Do more thorough staff training in all aspects of arsenic mitigation.

Improved monitoring and evaluation of arsenic mitigation programmes is needed to ensure that best practice is followed and lessons are learnt.

Public awareness is still at too low a level: new ideas are needed to build knowledge and influence behaviour.

There are some key suggestions on how to engage women in a meaningful way in arsenic mitigation activities:

1. Hire female staff in arsenic mitigation programmes and projects.
2. Use PRA; ensure that staff have appropriate and adequate skills to work with communities and especially women.
3. Reach women in convenient ways through courtyard sessions and Upazila workshops. Avoid meetings in places where women will find it difficult to attend for contribute.
4. Encourage men to respect women's views in arsenic mitigation and water source selection.

5. Urge people to include women in decision-making bodies, including local government and committees.
6. Female Union Parishad members could provide leadership and assistance to arsenic mitigation programmes, provided they have adequate training.

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1

1.0 INTRODUCTION

'Whatever we do, socio-economic conditions affect it'. (Professor Feroze Ahmed, BUET)

'The social side will determine our effectiveness, and whether the people think we are effective'. (Mr. Pradip Kumar De, Chief Engineer (Water Quality Management), Public Health Engineering Directorate, West Bengal, India)

'Development of such technology is only possible when a combination is made between bureaucrats, technocrats and villagers with proper village participation'. (Dr. Dipankar Chakraborti, School of Environmental Studies, Jadavpur University, Howrah, West Bengal)

'All these projects must include social awareness. They're for human beings, and it's human beings who are doing them'. (Dr. I. Zuberi, Rajshahi University)

The Bangladesh *National Policy for Arsenic Mitigation 2004 and the Implementation Plan for Arsenic Mitigation in Bangladesh* outlines the main challenges posed by arsenic contamination of groundwater and provides a framework for addressing these challenges. It includes consideration of social issues associated with the arsenic problem and mandates improved coordination of the efforts of all concerned agencies and organisations, both governmental and non-governmental.

Like the *National Policy for Arsenic Mitigation*, the *Bangladesh National Water Policy* (1998) relates water management goals to overall social development. This policy urges citizens to develop 'a state of knowledge and capability that will enable the country to design future water resources management plans by itself with economic efficiency, gender equity, social justice, and environmental awareness to facilitate achievement of the water management objectives through broad public participation....'

This report summarises current understanding of the social aspects of the arsenic problem in Bangladesh. Some comparable information on West Bengal, India, also is reviewed. The 'social aspects' as defined here include:

- Social, cultural, and economic factors that influence the impact of arsenic-related illness on people's lives and socio-economic patterns identified in epidemiological studies;
- People's perceptions and priorities and other social, cultural, and economic factors that influence the public's responses to the crisis; and,
- The institutions and programmes that can or do address the problem – the people who manage and implement them, and their apparent social effectiveness.

After reviewing these issues, the report presents some programme and research recommendations. Terms of Reference guiding this study are attached as Annex 1.

Methods of information collection

1.1

This report has been prepared by Dr. Suzanne Hanchett, a consultant to the Arsenic Policy Support Unit (APSU) over a three-week period in June 2004. It is based on a literature review, discussions with professionals working in the arsenic field, and the consultant's own previous research and evaluation studies, including field observations. To date only a few studies have been done on the social issues associated with the arsenic problem. Epidemiological studies, which always shed light on the social distribution of illness, are crucial to understanding social impacts of arsenic contamination of groundwater; but findings from current epidemiological studies are only partially published.

Information was collected through semi-structured individual and group discussions with various types of professionals. Most have field experience and extensive knowledge of arsenic mitigation project operations; some are academic researchers and some, consultants or environmental activists (some interviewees fit in more than one category). Interviews were conducted mainly in Dhaka, but some were done in West Bengal. A full list of the persons interviewed is attached as Annex 2. These interviews and group discussions supplement the literature review by giving professionals' perceptions of the most pressing social issues they presently encounter in their working lives.

The predominant mitigation strategy in use

1.2

In Bangladesh and West Bengal, most arsenic mitigation projects follow a general strategy, which can be summarised as follows. After gathering preliminary data on locations likely to be affected, organizations test tubewell water (with field kits in most Bangladesh projects, or at laboratories in India). The field staff undertaking testing usually inform people of test results and advise them not to use arsenic-contaminated water. They often paint the heads of affected tubewells red colour and the safe ones, green. The local population may or may not understand the messages given by the field staff, depending on how well the messages are communicated, how much time is taken to communicate, and the water users' own capacity to understand abstract information.

There may be some screening for arsenicosis patients, who are then probably referred to health services. Screening may be done either in public health camps or through house-to-house surveys. The persons identified as possibly having arsenic-related illnesses may or may not attend referral appointments. If they do attend, the doctors they meet may or may not know anything about arsenic-related illnesses. The organization undertaking the screening may (or may not) follow up on identified patients and coax them to go for further assessment and treatment.

Commonly, but not universally, some kind of local water user group or committee is formed, although this is done with varying degrees of thoroughness and public involvement. Usually after committee formation - but sometimes before or without it - an alternative water source or water treatment system is recommended and/or provided. The formation of committee and provision of arsenic-safe water frequently occurs some time after initial screening. All responsibility for operation and maintenance of that facility will be handed over to the 'community' within varying periods of time, but sometimes immediately after completion. It is not clear to what extent affected communities are trained or otherwise prepared to assume this responsibility.

Arsenic mitigation projects differ considerably in the degree to which they involve the general public in decision-making at each of these stages. It can also be assumed that there may be significant variation in the effectiveness of individual programmes between different geographical areas of operation

Public education ('software'), technical interventions ('hardware'), medical services, and research are all needed to solve the arsenic problem and must work in a complementary manner, as the Bangladesh National Policy for Arsenic Mitigation (2004) recognises. In an unknown number of cases, however, mitigation options are simply provided to people without sufficient public education, so people do not understand why they are there or how to use them. In other cases, communities are informed that they have an arsenic problem but no mitigation option is provided. The gap between mitigation services and health services is far too wide; but the gap seems likely to close up in future years, as health professionals now are getting included in training and action programmes.

Organization of this report

1.3

A review of epidemiological studies is presented in Section 2, in order to assess the significance of the health threat posed by arsenic contamination of drinking water and the relationship between socio-economic factors (especially poverty and gender) and arsenic-related illness. This is followed by a discussion in Section 3 of people's perceptions and socio-cultural factors influencing the public's willingness to stop using shallow tubewells and shift to new types of drinking/cooking water sources. An emphasis is placed upon the sexual division of labour and women's specific concerns as domestic water managers. This is followed by a summary in Section 4 of the main points arising in discussions with professionals about social aspects of arsenic. Section 5 reviews some principles of community mobilisation and issues associated with training. The need for local institutions to improve their capacity to undertake resource management and water quality testing is discussed in Section 6.

2

2.0 HEALTH ISSUES

The overall morbidity rate within Bangladesh is estimated to be 165.1 per 1000 population. It was estimated in 1994-95 that, on average, people in rural areas are ill 91 days of every year (males 90 days and females 92 days); and both men and women miss an average of 18 working days per year because of illness (BBS 1997). Arsenic-related illness is, of course, only one of many health problems affecting the Bangladesh population. Diarrhoea accounted for 5.5 percent of all morbidity in 1997; and diarrhoea prevalence was 16.5 per 1000 (BBS 1997). The prevalence rates during this period for some other water-and sanitation-related diseases were: dysentery 9.3/1000 and typhoid 2.6/1000 (BBS 1996).

2.1 *Epidemiological studies of arsenic-related morbidity*

In the few epidemiological studies that have been published to date it is possible to find some information on rates and prevalence of various arsenicosis symptoms. Risk increases greatly with the concentration of arsenic in water. In the Columbia University cohort study of 12,000 people in Narayanganj District, age-adjusted prevalence of skin lesions was found to be 10/1000 for men and 2+/1000 for women, with prevalence rates greatly increasing with age to slightly under 20/1000 in all persons over age 60. Those consuming arsenic every day in amounts over 495.3 µg/l have a mean prevalence odds ratio of 5.8 of developing skin lesions (Columbia University 2003). One cross-sectional study in South 24 Parganas, West Bengal, which included 7683 people, of whom 4216 were drinking water with more than 50 µg/l arsenic content, found almost 12% of the more highly exposed group to have lung disease. Other arsenic-related symptoms (pigmentation 9%, keratosis 4%, hepatomegaly 10%, neuropathy 5%, and others) were all found at significantly higher rates in the more exposed group (Mazumder *et al.* 2001).

Using the results from patient screening in a health camp in Damurhuda Upazila, Chuadanga District, Dhaka Community Hospital found that overall prevalence of arsenic symptoms was 0.458/1000 (Dhaka Community Hospital 2002:4). ICDDR,B Matlab study findings, which are scheduled for publication in October 2004, will add to the relatively meagre scientific knowledge base. A preliminary report indicates an overall arsenicosis prevalence of 3.5/1000, with the prevalence significantly higher (4.75/1000) in those aged 15 and above (Yunus 2003).

A study in a Jessore village with a population of 3606, where 87% of tubewells had arsenic concentrations over 50 µg/l, found 10% of villagers to have arsenicosis symptoms. Of those showing symptoms, 95.5% had melanosis, 68.9% had keratosis and 0.8% had basal cell epithelioma (cancer) (Ahmad *et al.* 2002: p95). In Sharsha Upazila, Jessore, a household survey by Asia Arsenic Network (AAN) has confirmed 312 arsenicosis diagnoses in the total population of 303,976 (0.103%, or 10.3/1000). Patients are found in large numbers only in one union (Bagachra), however, which had 259 patients in a total population of 7588 (3.4% or 34/1000). Frequently found symptoms in the total of 312 were: melanosis 92%, hyperkeratosis 61%, and leukomelanosis 35%. Cancerous and pre-cancerous lesions were observed in 6.4% of the patients (AAN 2004:21,31). In Murshidabad District, West Bengal,

out of 25274 people screened, 4813 (19%) were registered as arsenicosis patients (Dipankar Chakraborti, personal communication).

Acute, arsenic-related symptoms, such as lesions, are not yet found in all communities that have high levels of arsenic in drinking water, but they certainly are found in specific 'hot spots', where arsenic health problems may be as serious and visible as other health problems. There remains a lack of quantitative evidence, but there is a wealth of anecdotal evidence to this effect. For example, in Chandalhathi Village of North 24 Parganas, West Bengal, 30% of the women have been widowed over the past decade or two from arsenic-related disease, according to Alpana Hira Davidson (personal communication). In Samta Village, of Jessore District, 10% of the population has skin lesions or other visible symptoms, although in a similarly arsenic-affected area in the same Upazila, where concentration of over 700 µg/l of arsenic were found in the water, relatively few arsenicosis patients were found (AAN 2004).

It is generally recognised that poor people are more likely to be afflicted than others exposed to the same levels of arsenic in drinking water. The Asia Arsenic Network has found this in Sharsha Upazila, Jessore. In the well-studied Samta Village the majority of serious arsenicosis cases are found in the poorest section (*Poschim Para*). Preliminary results from the Columbia University cohort study in Narayanganj District demonstrate a strong association between poverty (indicated by landlessness, income, and no education) and the prevalence of skin lesions (Columbia University 2003). ICDDR,B Matlab data, when published, is likely to include socio-economic information on patients (Dr Yunus, personal communication). All large-scale, national patient screening to date has been done without collecting socio-economic information on patients; so the only reliable information on this point comes from limited regional studies.

There is very little information on arsenic-related mortality. One forthcoming study report by the 'Project to Remove Arsenic from Village Drinking Water Supplies', based at Bengal Engineering College, Howrah, does, however, include mortality statistics. These are taken from its Project's 75-village working area, which covers three districts of West Bengal – Mushirabad, Nadia, and North 24 Parganas. According to this report, 11.4% of male deaths and 2.3% of female deaths have been caused by arsenic-related illnesses, but the time period these statistics cover was not indicated in the available material. A significant finding of this study is that, the percentages of death that are arsenic-related increase as household income declines. For example, preliminary data indicate that 4.3-4.5% of male deaths (and 0.8-1.1% female deaths) that have occurred in households with incomes of Rs. 2000/month or less were associated with arsenic poisoning. Among households with monthly incomes of Rs. 2000-5000 only 0.2-1.4% of male deaths were attributed to arsenic-related illness. There have been no recorded deaths from arsenic-related illness in households with monthly incomes of Rs. 5000 or more.

Gender and arsenicosis: epidemiological studies

2.2

Epidemiological studies to date present somewhat contradictory information on the different ways that arsenic tends to affect males and females. Studies of large populations all find prevalence of arsenicosis symptoms to be significantly higher among males than among females (DCH & UP SHON 2000; Mazumder *et al.* 2001; Columbia University 2003; Yunus 2003; AAN 2004). One smaller study, however, has identified larger percentages of women than men among arsenic-affected patients in Bhanga Upazila, Faridpur District (58.6% of 488 patients), and in Barura Upazila, Comilla (62% of 58 patients) (WHO 2002).

It is important to recognise that in any public screening procedure or health camp women will not receive as much attention as men because of their greater reluctance to be examined by male physicians. Furthermore, smaller study populations will have statistically variable characteristics. Thus the data from large-scale, scientifically sampled populations are generally more reliable.

Prevalence indicators are useful but relatively crude measures of health problems. Two studies using other analytic techniques suggest greater risk among females. One report on a large study in West Bengal covered respiratory symptoms among non-smokers. It found that *prevalence* of symptoms was higher among males, but that the age-adjusted *prevalence odds ratio* that was higher for females (Mazumder *et al.* 2001). This apparent contradiction may be explained as follows. If men live longer, there will be proportionally more men with symptoms; but at any given age level, women may be at higher risk (Dr Abdullah Brooks, personal communication). Another report, on a cross-sectional study in Nawabganj District, found that 'Exposed females, being lower in weight and less likely to be literate, were more affected by low arsenic doses than male exposed respondents' (Ahmad 2002b). These reports deserve further evaluation by epidemiologists before any programme decisions can be made based on their findings.

The Columbia University cohort study findings differ from the above-mentioned Nawabganj report. The cohort study finds age-adjusted prevalence of skin lesions to be much higher for men than for women at every dose level. For example, among those consuming 263-864 $\mu\text{g/l}$ of arsenic in their drinking water, the prevalence of skin lesions for men is well over 20/1000, but the prevalence for women is only slightly over 5/1000 (Columbia University 2003).

Risk factors contributing to higher prevalence of skin lesions among men have been analysed in the Columbia University cohort study. Body Mass Index (BMI) was found to have an effect on risk of skin lesions. Smoking was an especially significant factor in developing lesions. Use of pesticides and fertilizer were studied but found not to be significant in one preliminary report (Columbia University 2003).

Social issues associated with arsenicosis in women

1.3

The relevant socio-cultural background for women in Bangladesh can be summed up briefly: women of all groups generally have lower status and less social value than men. Women tend to eat last and least in their households. Therefore if they live in poor families they are the most likely family members to be malnourished. Women are on average less well educated, younger, and have less earning power than their husbands. Male-female status differences can be expected to produce large differences in how patients of different sex are treated, as illustrated in Box 2.1.

Box 2.1

I have compared two family cases. In one the main male member had arsenicosis, and his wife nursed him. But in the other family the wife had arsenicosis, and her husband divorced her.

--Umme Muslima, BAMWSP Gender Specialist,
June 2004

As a consequence of their lower status, the needs of women for health care are taken less seriously by others, and at times even by women themselves. In two group discussions participants mentioned that Bangladeshi women of all socio-economic classes do not speak much about their health problems. It is considered not feminine to bother people with one's health problems, even when feeling very ill. The cultural value, rather, is on women's attending carefully to others' health needs. There was some disagreement as to whether women accept this standard willingly, or whether it is foisted upon them by thoughtless husbands and others who do not want to be bothered escorting women to medical appointments. This is illustrated in Box 2.2.

Box 2.2

Regarding women, according to our culture, even a rich woman won't tell anyone that she's sick. But if my husband or son is sick, I make a big fuss. A woman may be almost dead, but she won't create problems for her family by saying she's sick. *We really don't address the root problem.* (Professional woman in group discussion, June 2004)

If the wife is sick for a long time, family affairs are neglected. But if the husband is sick, we expect the wife to carry on. (Man in group discussion, June 2004)

Females who have visible arsenicosis symptoms are said to be more likely to suffer socially than males, although both can be and are socially rejected. As one interviewee put it, men's higher social standing gives them impunity: whatever they do, 'they are more easily forgiven'.

A serious but rarely mentioned consequence for women having arsenicosis lesions is that they have difficulty finding work in jobs where they have close contact with the people they work for, for instance as maids or tailors. In a discussion with the NGO Arsenic Information and Support Unit (NAISU) an example was given of a woman who lost her job as a tailor in Dhaka because of her symptoms. For self-supporting women or female household heads, this sort of difficulty will be economically catastrophic.

More often discussed are difficulties arsenic-affected women experience in marriage arrangements or in being abandoned/divorced by their husbands. In fact, such family difficulties *are* the ‘social issues’ that first come to mind when most people talk about the social side of the arsenic problem. Difficulties with getting married or staying married are, of course, very serious. Women with such difficulties will face dire economic consequences if they are poor, or even semi-poor. Furthermore, any women whether poor or not, would be publicly humiliated by such events.

Khalid Hassan (2004) in a field report on the comments of 13 arsenicosis patients mentions an important difference between family attitudes and community attitudes. The report notes that ‘Compared to men the female arsenicosis patients suffer more social consequences in Sirajdikhan Upazila’. The report goes on to say: ‘Unfortunately most of it comes from their own households. ...Community people are empathetic to the arsenicosis patients. But sometimes the husbands of the patients are not exactly as concerned or sympathetic as [they] should be’. This observation, if widely valid, poses a true challenge to any awareness-raising programme, for it suggests that changes in community attitudes may not actually benefit women’s lives. One certainly hopes that increased community awareness would improve the likelihood of husbands’ helping their wives to get needed medical care. These field observations suggest, however, that such an outcome is not guaranteed even in a carefully managed awareness programme.

Arsenicosis and poverty

1.4

Not only are poor people more affected by arsenicosis; but also arsenic-related weakness and illness causes further economic damage, as people suffering from arsenicosis are increasingly unable to work (Ahmed 2002). Among poor families adults are reluctant to take medical treatment because their families cannot manage without their daily pay. During one field visit, a group of low-income patients sent one person to the Upazila health centre to collect monthly medicines for all, because the travel costs were too difficult to bear (World Health Organization and UNICEF Bangladesh 2003). Some families are rendered destitute when their earning members die of arsenic-related disease. Most field workers in highly affected areas have seen and reported on people living and dying under such unfortunate circumstances (for example, see Chakraborti 2002 and Box 2.3).

Box 2.3

“Even if they die, the earning members won’t come to Kolkata [for treatment], because there wouldn’t be anyone to support their families.”

As many with direct experience of these problems know, poor people in Bangladesh and India have overwhelming burdens of both economic hardship and illness. Most water and sanitation illnesses and deaths are more prevalent among the poor (DPHE-Danida 1999:44-47).

Other health problems associated with arsenic

1.5

There are suggestions that the social consequences of suffering from arsenicosis can result in mental health problems. A recent newspaper article mentioned the “psychological pain” caused by social isolation or rejection of those with visible symptoms of arsenic-related illness (*Ittefaq* 2004). One physician working on the Columbia University cohort study said that he did not encounter much social rejection, but he did know one man who was deeply troubled when others he joined for worship in a mosque moved away from him. There are occasional reports of young women committing suicide when no one will marry them. One example from the BAMWSP working area is presented in Box 2.4.

Box 2.4

A teenage girl got married and went away to live in her in-laws' home. When she got married there were few signs of de-pigmentation on her body. Her in-laws did not suspect that anything was wrong with her. She worked from dawn to dusk, drank arsenic-contaminated water, and ate foods with little protein content. One day her husband and others noticed that she was ill and could not do domestic work. They saw her hands and thought she had leprosy. Then and there they started avoiding her, stopped touching her or eating any food she cooked. They called her father to take her and demanded a lot of money from him for supposedly cheating them.

The poor girl went back to her father's home, but she did not get her childhood and youth back again. Rather, she was resented as an additional mouth to feed in a family of eight or nine already living hand-to-mouth. They saw her as a 'bad omen girl'. The community ostracised the whole family.

The girl took all the blame onto her own shoulders and one day hung herself, to free her family. But she will never know that a family who violates the suicide taboo is cursed and abandoned by society.

-- Umme Muslima, Gender Specialist, BAMWSP

Dipankar Chakraborti, when interviewed in June 2004, described a case in which 11 members of one family had Bowens cancer. A son of that family committed suicide because (he concludes) other boys were teasing him for not going out to the fields to work like others.

Health risk substitution associated with alternative water

1.6

sources

As at least two studies have demonstrated, and many have feared ever since the arsenic 'crisis' became a public issue, there are health risks associated with abandonment of tubewell water. Drinking water hazards that can replace arsenic include: pathogens, toxins from cyanobacteria in surface water, and chemical pollutants. The health effects of pathogens are acute, and are well known to cause both diarrhoea and child mortality.

If not adequately covered or sealed, dug well water is easily polluted. One study of 72 randomly sampled water sources investigated the sanitary integrity and water quality of dug wells and deep tubewells. Thermotolerant coliforms were detected in very few of the deep tubewells but were present in 94% of the dug wells. Arsenic above the Bangladesh governmental standard (50 µg/l) was found in one dug well, and above the World Health Organization standard (10 µg/l), in three. Dug wells are a popular alternative water option in arsenic-affected areas. This study concludes that this option, like others, can supply good water quality but only if properly situated, operated, and maintained. However, 'in worst case conditions, deep tubewells can safeguard health better than dug wells' (APSU 2004).

3

3.0 SOCIAL FACTORS AND RESPONSES TO THE ARSENIC PROBLEM

Social factors ultimately will determine the sustainability and thus the long-term impact of mitigation projects. Virtually all professionals interviewed in this review have come to understand this fact.

2.1 *Poor people's priorities*

It is not known at present how concerned people are about the problem of arsenic in drinking water. Some reports mention widespread 'panic'. Others, including comments from several professionals interviewed for this study, feel that people are not as concerned or 'aware' as they should be. If arsenic-affected people are not overly disturbed about this problem, what does concern them? Some indication of poor people's overall life priorities can be found in Chapter 2 of the Interim *Poverty Reduction Strategy Paper*, which is currently being revised into a full PRSP, 'Participatory Consultations on Poverty Reduction Strategy'. In brief, citizens' priority concerns are as follows:

- Physical infrastructure (roads, transportation, telephones, other facilities)
- Law and order, amidst incidence of organized crime, extortion, economic violence
- Need for more effective, decentralised local government
- Education: poor quality of; and widening education gap between rich and poor
- Health services: poor quality of, at Upazila and District levels
- Safe water supply and environmental sanitation
- Lack of coordination among development agencies and institutions at local level
- Unemployment and economic opportunity
- Need for more pro-poor collective action ('social capital')
- Wish for more democratisation of political processes (Bangladesh I-PRSP, p. 22)

This list, while it does include safe water supply, helps us to understand why people may have difficulty giving an arsenic contamination problem high priority. The poor are preoccupied with meeting basic survival needs, as demonstrated in box 3.1. Several interviewees working in patient identification or mitigation programmes have commented on the fact that very poor people do not have the time or money for health care unless their problems are extremely serious. Even then, the struggle to avoid hunger is likely to prevail over other uses of time and money.

Box 3.1

The project was target oriented with a goal to mitigate arsenic problem. In reality, many problems are more acute in rural perspective. As other problems were not addressed adequately, in some cases people did not give so much importance to [arsenic] as the project desired (Majumder and Kahali 2003:24).

For poor people in areas covered by mitigation programmes, requirements to pay for mitigation options may pose insurmountable problems. Unlike more the more affluent, poor households usually cannot afford to install individual arsenic removal devices or their own,

personal safe water systems. One programme staff member interviewed pointed out professional noted that ‘the current government policy [for arsenic mitigation] is to not subsidise household level options [such as arsenic removal technologies or rainwater]. So poor people cannot buy any [options] for their own families’. The policy is to provide fully subsidised community-managed arsenic mitigation facilities in the ‘emergency phase’. In the medium and long-term responses, cost-sharing will be required in line with the 1998 *National Policy for Safe Water Supply and Sanitation*.

Most current mitigation programmes expect rural communities to share costs of any community-level or household-level mitigation option provided. Some professionals interviewed suggest that the poor may have difficulty contributing their full share of the amounts required under cost-sharing arrangements. According to one interviewee: ‘In the end, they are dependent on the whims of the rich’. Several programme staff members alluded to situations in which local elites try to ‘capture’ or dominate mitigation options. Some rich people, who are able, try to pay all the costs in order to control an option.

Two or three people interviewed mentioned the need to make sure that *all* users pay, at least according to their abilities, so that all have clear rights to use new safe water sources. One or two interviewees felt differently, however, saying that dependency of the poor on the rich offered some modicum of security. They felt that it was unwise for a programme to interfere in this side of village life to any great extent, as rich people are likely to give the poor use rights for free. Commenting on these situations as ‘invisible obstructions’ to programme effectiveness, Mr. Azad (a UNICEF consultant) said: ‘The voice of the poor isn’t heard. They’re getting some charity, but they deserve more than that’. The range of views from the people interviewed reflects the range of opinion in the broader professional community regarding cost-sharing.

2.2 People’s perceptions of arsenic

There have been a few studies of people’s perceptions about arsenic. Most have found that those with better educational backgrounds have a greater understanding of the risks associated with consumption of arsenic-contaminated water. It has been found, however, that a carefully managed public education programme can compensate for educational differences and raise awareness levels of the less or un-educated (and poor) to the same level as others’ (Hanchett *et al.* 2002).

People have their own ideas about arsenic. Those in highly affected areas who know people with arsenic related illnesses are likely to think differently from those elsewhere. Attitudes toward male and female patients have been discussed above, in Section 2. According to one survey, some 47% (and 53% of rural respondents) in Bangladesh consider arsenic related illness to be contagious. The same belief is reported from West Bengal. Such beliefs cause emotional pain and interfere with normal social life even in places covered by awareness-raising programmes (Asian Development Bank 2003; Rosenboom 2004).

Even if they ‘know’ about arsenic, people may be reluctant to touch, take food, or share a bed with a patient; and high percentages express reluctance to form marital connections with families of arsenic patients. Some people appear to regard arsenic-related illness as a ‘curse of God’ and may ostracise the afflicted. A case study from West Bengal, for example, described a funeral, in which the deceased (who had died from a arsenic-related illness) was not touched in a normal way because of fears of contagion or curse. In one evaluation study it

was found, nonetheless, that an intensive public education programme in Sirajdikhan Upazila had lessened the tendency to ostracise arsenicosis patients, according to some patients' own reports (World Health Organization and UNICEF Bangladesh 2003).

According to some reports, there is a degree of shame associated with having a family's tubewell water contaminated by arsenic. One person from NAISU said, 'I have seen people remove the colour from their tubewell after testing, because they cannot get their children married [if it is painted red]. It is very embarrassing. I saw this in Natore District'. Other examples of changing or removing the paint are reported in evaluation studies as well (for example see World Health Organization & UNICEF Bangladesh 2003).

According to one NAISU staff member, in some places where arsenic awareness is raised: 'A girl's family is beginning to ask about arsenic in the prospective groom's home'. Another in the same group discussion added 'We have seen whole communities shunned or excluded from society'. A NAISU newsletter, the *Arsenic Bulletin* (published in Bangla), included a report about *Bagan Para* in Achintya Nagar Village, of Jhenaidah Sadar Upazila in Jhenaidah District. It was reported that this place has so many arsenicosis patients, that local people have re-named it as 'Arsenic Para' (*Arsenic Bulletin*, July 2001).

In areas where the drinking water is contaminated but there are no known patients, many people have trouble grasping the seriousness of the risk to their health. As arsenic has no smell, colour, or taste, some choose to disregard warnings. This tendency seems, according to personal reports, to be most pronounced among uneducated people. 'Arsenic' to many is a very abstract and remote concept. Some think it is a fault of the pumping mechanism itself, or the specific well. Geological information about groundwater, aquifers and other scientific concepts and terms seem to be hard to grasp.

3.2.1 Sources of knowledge about arsenic

An survey funded by the Asian Development Bank of 536 adults in two rural and two urban areas of four districts (Shatkhira, Faridpur, Comilla, and Manikganj) found that people's main sources of information about arsenic were: television (57%), radio (27%), government health workers (23%), and neighbours or relatives (19%). Men were somewhat more likely to get information from television and radio than women (60% and 33% vs. 54% and 20%, respectively); and women were more likely than men to depend on information from neighbours or relatives (20% vs. 18%, respectively). Survey respondents were approximately 75% rural and 25% urban.

The same survey asked people what they knew about arsenic. Responses from men and women were generally similar, with the relatively high percentage of people recognising arsenicosis as a dangerous disease, off-set by the low percentage of people recognition of arsenic as a poison as indicated in Table 3.1. Recognition of arsenic as a poison was higher among men, but still only just over 10% of men interviewed considered arsenic as a poison.

Table 3.1 Level of knowledge on arsenic by sex (multiple responses)

Knowledge of arsenic	Sex of the Respondent	Total
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	Male (N=274)		Female (N = 258)			
	No.	%	No.	%	No.	%
It is a dangerous disease	209	76.3	218	84.5	427	80.3
People dies if they drink arsenic contaminated water for a certain period	133	48.5	113	43.8	246	46.2
Arsenic is a poison	31	11.3	15	5.8	46	8.6
People suffer from itching/scabies/sores if they drink this water	15	5.5	13	5.0	28	5.3
This is a disease which cause decaying	2	0.7	7	2.7	9	1.7
Black spots appear on the skins if one drinks arsenic contaminated water	2	0.7	3	1.2	5	0.9
This water causes different types of diseases	1	0.4	0	0	1	0.2
This problem arises when excessive iron comes out from the tube well's water	1	0.4	2	0.8	3	0.6
Black and grayish spots is seen on the skin if someone is affected with arsenic	6	2.2	1	0.4	7	1.3

Source: Social Survey data, Asian Development Bank, SSTA No. 4170-BAN: Arsenic Mitigation Review and Strategy Formulation (from Ms. Shireen Akhter)

2.2.2 Describing arsenic as 'poison'

An interesting issue that arose during the interviews with professionals concerned explaining to people that arsenic is a 'poison', using the Bengali word *bish*. One ethnographic researcher, Ms. Aasma Afroz Shathi, of ICDDR,B's Matlab Project, claims that the use of this word is confusing. According to Ms. Shathi, most people think that 'poisonous' items, such as pesticides, have distinctive smells and colour; and they kill quickly when ingested. It is, she says, a sort of 'miscommunication' to use the word 'poison' in connection with arsenic, because people have difficulty grasping the idea that a 'poison' can have no colour or special taste. It seems impossible to many that good-tasting water should ever be 'poisonous'. In pursuing this matter with other professionals, the consultant found most disagreeing with this point of view, and feeling that it was all right to use the word 'poison'. Several said, however, that they do modify the description, always saying it is 'one type of poison', rather than simply using the word *bish*. In one group discussion someone expressed the view that it was quite difficult to translate the phrase 'slow-acting poison' into Bengali, although that is the expression that they felt was needed.

In the Columbia University cohort study they do not use the word 'poison' in communicating with the public about arsenic. They avoid the word 'poison' in order to not frighten people. The Project Director, Dr. Tariqul Islam, noted that 'We use the colour sort of idea to explain about arsenic in water... We say it's like colour, fertilizer, or pesticides'. Comparing arsenic to dye or colour makes sense in this area, he claimed, since many of the people in the areas where they work are involved in the textile industry. The point came up that makers of pesticides actually refer to their product as 'medicine' (*oshud*). He mentioned also that arsenic is an ingredient in some homeopathic medicines, so many would resent its being called a 'poison'.

2.2.3 Studies underway

Some studies are under way to analyse the social dynamics at play in arsenic affected villages. These include research by at least two Ph.D. candidates (Sultana; Davidson) whose studies are described briefly in Section 8.6. ICDDR,B is about to start an ethnographic study in some affected remote villages in Matlab, Chandpur District.

Women's interests and women's capacity to participate

2.3

Most of the answers to the questions about why people change their domestic water use behaviour (or do not) are literally in the hands and minds of women. Women make decisions about collection, storage, and distribution of domestic water. It is they, and they alone in the great majority of cases, who will or will not change to safer sources. Men typically have more economic power than women, but domestic water is a woman's responsibility, one she takes seriously as a contribution to family health and well-being. Women throughout Bangladesh have learned that surface water is unsafe; and they appreciate the reduction of diarrhoea that has come with tubewell water use.

Perceptions and social behaviour have complex influences. They are strongly conditioned by social roles and traditions. People get some of their ideas through social networks, some from mass media, and some from their own deliberations. Perhaps even more importantly, people's capacity to respond to warnings about arsenic are constrained by their available resources, especially money and - in the case of women - time.

Women who are not ill, or who do not know patients, have at least four major problems in responding to the news that their tubewell water is contaminated with arsenic. First, they may or may not be welcomed at public meetings where the problem is explained in detail. As a consequence they may not learn much about the problem unless courtyard sessions or other activities are arranged to inform them. Second, being generally less well educated than men, they often have difficulty understanding or remembering the messages conveyed. Third, they are very busy with household work and greatly appreciate the convenience of their familiar water source, the shallow tubewell. Lastly, they are vulnerable to violence if they venture too far from their homes; so their personal security needs may prevail over their concerns about getting safe water from a distant source. This last problem is even more significant for girls aged 8 to 15, who often share their mother's housework responsibilities. If a new and safe water source is too inconvenient for any of the above-mentioned reasons, it is likely that the majority of women will continue to use arsenic affected water rather than use this source (Jakariya 2003). Social pressures on

Box 3.2

Four brothers lived in a family in a village. All were married. The youngest brother was newly married and felt sympathetic with his wife, who was pregnant. She had the job of lifting water from a dug well and pouring it into the cattle bowl outside their home. One day he started to help her to pull her water pot up from the well, because the ground was very slippery, and the pregnant woman would have to cross the yard carrying the large, heavy pot.

As he helped her with this task, the other three sisters-in-law mocked the man for doing womanly work. His elder brothers feared that his manliness was suffering. Observing her husband taking this abuse, the wife grabbed the rope, pulled up water pot from the well, and marched across the yard to fill the cattle bowl by herself. The young man then sat smartly away from his wife and took up the manly work of smoking a *hooka*.

--Umme Muslima, Gender Specialist,
BAMWSP

men may also limit their ability to assist women, as illustrated in Box 3.2.

Women's sense of responsibility for careful water use as a way of protecting their families can be so strong, according to some reports, that women may be blamed or even blame themselves for any and all problems with water-related illness, including arsenicosis (Tomizawa 2001). Farzana Sultana (in preparation) sums up some pertinent points:

“It is often noted that women’s role in water resources management is generally high, but their role in policy-making and decision making at multiple scales is low compared to men. Participation of women, from different social backgrounds and locations, is thus needed at different levels to ensure proper consultation and distribution of benefits.... It is important to ensure that participation in local projects does not result in gross increases in workloads and burdens for the poor. Furthermore, it should be recognized that women’s interests in water are not just for drinking and domestic water but for productive water as well....”

Comments by experts interviewed in this review confirm these general observations and the weak role of women in most arsenic mitigation projects. It should be noted, however, that a number of programmes throughout Bangladesh have succeeded in bringing women into public decision-making processes and groups. Direct election of women to Union Parishads is the best example. In the case of arsenic mitigation, it seems self-evident that excluding women is a serious mistake.

4

4.0 WHAT THE EXPERTS SEE AS THEIR BIGGEST CHALLENGES

Programmes to combat the arsenic problem are planned and implemented by people with their own expertise, opinions, and organizational constraints. Almost every professional interviewed for this study was asked the question, ‘What do you consider to be the biggest challenge in arsenic work nowadays?’ People were asked to focus on socially related challenges. A brief summary of the eight most frequently mentioned challenges is presented below in Table 4.1. Some comments were made in group discussions with one speaking and others indicating agreement with gestures; so the counts are not precise.

Table 4.1. Most challenging issues mentioned in descending order of frequency

Issue	Nationality of Respondent (rough counts)	
	Bangladesh (out of 35+)	West Bengal (out of 7)
1. Raising public awareness to the point that people actually change their water-use habits and possibly decide to pay for safe water.	18	4
2. No single alternative water option will suit all situations; arranging safe, affordable, convenient and otherwise acceptable domestic water options.	8	
3. Guiding people to develop ways of solving their own arsenic problems; helping people to develop the necessary self-confidence and self-help capacity.	8	
4. The shift from familiar household-level drinking water sources to community-based sources creates the need for community-based systems to manage community solutions in a sustainable way.	6	
5a. Lack of decentralisation of public services interferes with programme implementation; Union Parishad has no authority over arsenic mitigation activities; Government mandated arsenic committees are mostly inactive but should be involved.	7	
5b. Indian Panchayats do have authority and often are actively overseeing arsenic mitigation activities; but they tend to be very target-oriented, not strong on “quality” of processes/planning; some let politics interfere, but some do not.		2
6. Given the complexity of the arsenic problem – that it is geological, medical, <i>and</i> social, there is a need for comprehensive approach; strong coordination needed among various types of mitigation/awareness raising organisations; information sharing needed; cross-cutting issues not getting enough attention.	7	
7. Participatory local planning processes are often too weak; the voices of women and/or poor people are rarely heard.	6	1
8. Better staff training is needed; present staff ‘orientations’ are not sufficient; evidence-based messages should be communicated to the public by specialists.	5	
9. Economic and social problems of arsenicosis patients	3	2

A great many well-articulated comments were made by the professionals interviewed. The table above summarises only their main points. A more complete list of comments can be found in Annex 3.

This list provides us with some understanding of the conventional wisdom within the world of professionals now working on the arsenic problem. If social aspects are to be considered in the future, this is a sort of general baseline of social thinking among the experts. Given plenty of time to express themselves, these intelligent, well educated, and experienced people all made thoughtful and lengthy comments. No two have exactly the same point of view; and there are, of course, plenty of debates and disagreements. Nonetheless, we now have a general picture of what is on the experts' minds – and also what is not.

As Table 4.1 indicates, many of those interviewed expressed frustration, even exasperation that the public is not responding vigorously to the news of this 'crisis'. Water-user group formation efforts reportedly work in some places but not in others, with the worrying result that community-based water supplies may not be properly maintained in the long run. People who supposedly 'know' about arsenic are said not be sufficiently 'aware' to actually change to safer drinking water sources. Some find people reluctant to take advantage of mitigation options even if offered for free (and perhaps because they are free). The Chief Engineer of the West Bengal Public Health Engineering Directorate observed that whereas people in his state once were up in arms and demanding more and better quality water, many had become complacent after seeing that the 'poison' did not produce rampant disease and death two decades after the problem was publicly recognised.

Whereas higher governmental officials may tend to blame the public's lack of awareness or motivation for unsatisfactory results, others acknowledge that service providers and policy makers themselves share responsibility for some of the inadequacies. The arsenic problem by now has produced a crowded field in which numerous types of agencies – governmental, UN, NGO, religious, and volunteer groups – rush into villages to implement schemes in a highly un-coordinated manner. Their differing messages, tubewell testing methods and results, and ideas about how to solve the problem confuse the people they intend to 'help'. It is clear, then, that the experts' organisations/agencies do not communicate or collaborate to a sufficient degree, as illustrated in Box 4.1. Sometimes two or more organisations will offer competing or conflicting services in one place. For example, there are examples from both Bangladesh and West Bengal where a carefully organised pond sand filter system or dug well was abandoned when a new agency appeared without warning and installed a deep tubewell. Such coordination problems are guaranteed to produce confusion, not motivation, as noted in the *National Policy for Arsenic Mitigation 2004*.

Box 4.1

In spite of NINE awareness programs held by Project Well and LKP, covering a small area, some of the dug wells are not being used as expected. Why? 1) *Installation of too many options in the same area due to lack of coordination between NGOs working in the villages and lack of proper planning...* 2) *Subsidizing is an essential concern....[If] villagers contribute either by cash and/or by labour or raw material, [this] enhances the sense of ownership of the water supply among the users.*

A few interviewees expressed concern that project efforts may not always benefit poor people; and more than a few admitted that women's voices are not often heard in local-level planning discussions. Very few offered suggestions on how to overcome these types of social challenges.

Most of the community-based projects are heavily supported by the NGOs or other organisations that initiate them; but these organisations are only temporary custodians of the new, safe water sources provided. There are numerous discussions and debates under way among the experts concerning what social institutions will ensure a permanent, safe drinking/cooking water supply to people in arsenic affected areas. Are governmental or non-governmental agencies likely to provide the most appropriate and sustainable mitigation

services? Should people, even the poorest, be required to pay something or not? What is the local body most likely to take on long-term responsibility for operation and maintenance of an alternative, safe water source once installed -- the Union Parishad (or Gram Panchayat, in India), a volunteer user group, or some other entity? Is a paid caretaker absolutely necessary? Experts expressed a general sense that local government needs to be involved, but few had specific ideas about how such involvement could produce the desired long-term sense of local responsibility for maintaining arsenic-free water sources. As will be discussed below in Section 6, some community organising experiments are being scaled-up as strategies to combat the arsenic problem.

Pertinent matters *not* raised by many experts were: (1) social factors likely to influence people's awareness levels or motivation to change water sources; and (2) a sense that an arsenic awareness or mitigation programme may need to try some bold and socially innovative approaches if it is to actually reach all those who are at risk or suffering because of arsenic-contaminated tubewell water. Activities are considered mainly in a technical light – developing and introducing an option, persuading people to pay for it and use it, arranging to have it taken care of properly. The possible benefits of adopting a social change perspective are rarely considered. (3) Health professionals are focussed on patient diagnosis and care, if they deal with arsenic-related illness at all; and most seem to have a limited understanding of the connection between arsenic-related health/illness and social life.

5

5.0 COMMUNITY MOBILISATION AND STAFF TRAINING

Increased use of community-based safe water options either will require new forms of village cooperation, or will place new responsibilities on existing local/social institutions. This shift in village life is recognised by mitigation programme planners; and many are trying to facilitate the development of water user groups and other potential management agents.

It is important to understand that, if they perceive a need to do so, Bangladesh rural communities have the capacity to mobilise themselves to resolve water resource management problems with little or no external assistance. Development agencies tend to be pessimistic about this potential, but there is clear evidence that it does exist. A persuasive study was done in the 1990s under the auspices of the Bangladesh Water Development Board's Systems Rehabilitation Project/SRP (Duyne 2004 and 1998). This study analyses a number of cases of large-scale, locally initiated surface water management activities to prevent flood damage, conserve water, improve irrigation, and so on. More importantly, the study notes that rural people collectively and actively strive to manage their environment. Furthermore, local people are not passive in relation to external interventions in their regions; rather, they try to assess and even manipulate externally (including government) initiated projects in terms of their own perceived needs and interests. Most (if not all) regions have some respected leaders. These may be elected persons or others, who can and will act to protect or advance collective interests, frequent reports of local corruption and so on notwithstanding.

One report on the response to the arsenic problem in Charigram and Singair unions of Singair Upazila, Manikganj District, described a situation in which local people drew upon their past history with the Social Mobilization for Sanitation campaign and mobilised themselves. (Hoque 2000) The national campaign went on from 1988 to 1999 and reached these unions in 1995-97. The two unions had illiteracy rates (indicative of poverty) of 60% and 37% respectively. They had learned from the sanitation campaign how to form local action committees; and did so with apparent effectiveness. Local and Upazila/Thana government and elected officials were actively involved, as were the often-inactive WATSAN committees. Women and men both actively participated.

Overall, community and multi-partner participation in arsenic mitigation was high, as in the social mobilization for sanitation. Volunteer women, social and elected political leaders, schools students, and health workers participated in the planning, promotion and implementation of the activities as members of the UWATSAN (Union level) and VWATSAN (village level) Committees or as their nominated volunteers. The elected Union Parishad Chairmen and women volunteers played the key roles in planning and implementation of the activities. They discussed the impacts, mitigation issues, water supply options and sharing of the costs at courtyard and/or schools meetings. Selected messages were also disseminated through rallies and public announcements (mikings). The Sub-district Administrator (Thana Nirbahi Officer) facilitated awareness, motivation, planning, coordination and monitoring at sub-district level. He also participated in mass awareness meetings. His involvement also influenced interest in other unions (Hoque 2000:489).

WELL (2002) reports on a programme from Banaripara Upazila, Barisal District, in which government officials, teachers, and others were interviewed long after the sanitation campaign. This study confirms that Social Mobilization for Sanitation did indeed activate people at all levels of government and society to work for sanitation improvements and lends credibility to the Manikganj situation description presented above.

In situations without such a history of self-mobilisation, external agents probably will be needed to help people to develop ways of managing their new community water sources. Facilitating such local group formation, however, is a very labour-intensive and time-consuming activity. It requires staff with appropriate negotiation and communication skills and a carefully managed process of building up trusting mutually respectful relationships with residents. Self-help is the objective, not just compliance with externally imposed ideas. There are wider social development benefits to be derived from this approach beyond the public health benefits. In the Asia Arsenic Network's rural piped supply project in Putkhali Union, of Jessore District, for example, the pipeline committee is being encouraged to register with the Social Welfare Department and conduct various social development activities. At least one other local development project, LGED's Small Scale Water Resources Sector Development Project (SSWDRSP), has found that people's interest in single-issue committees or groups is likely to dwindle over time; so the cooperative associations formed under this project are encouraged to promote savings, micro-credit and other popular local improvement efforts.

Where there is a lack of either local leadership or external agencies to facilitate community involvement and participation, mitigation options when provided may still fail as illustrated in Box 5.1.

Box 5.1

Morolpara is a section of Krishnakathi Village, Jamalpur Union, Tala Upazila, in Shatkhira District. Ninety percent of the inhabitants of Morolpara are reportedly affected with arsenicosis. Shafiqul Islam of the locality, age 35 years, is in critical condition. Several members of his family have died of arsenic-related illnesses. Most of the people know about arsenic but have no option but to drink arsenic-contaminated water. The people accept the situation as their fate. In 1993 the then-District Commissioner, now Civil Surgeon, and other senior officials visited the area. One pond sand filter was installed, but it was abandoned within a few months. The people are not in harmony. They have neither local leadership nor outside initiatives to save their situation. (NAISU, *Arsenic Bulletin*, April-June 2003)

In Bangladesh and West Bengal there are good community mobilisation models to follow, and effective techniques are documented (for example, see Watsan Partnership Project 2000a,b,c and UNICEF, in press). If the implementing agency works with partner organisations, it is of the utmost importance that they be genuinely willing to mix with local people, and that their work be closely monitored and objectively evaluated. Such methods have been followed in a number of programmes with reportedly good results. Benefits of a participatory approach are summed up in a report from the All India Institute of Hygiene and Public Health's Community Based Project to Mitigate Arsenic Pollution in West Bengal (Majumder and Kahali 2003:24):

'Earlier in the arsenic affected village people were contacted by various agencies for various purposes to relieve the people from arsenic problem. As a result people became confused. They could not decide whom to hear and what [was] to be done. In

this project, a definite approach had been taken so that the health, technical, socio-cultural and economical aspects could be delivered from a single outlet in an integrated form. This obviously cleared much confusion of the community groups and they got much constructive guidelines on the **dos and don'ts** to get relief from the arsenic hazards. *The benefits of this approach may not be very visible within such a short period but is expected at the end and would prove worthy for any community-based project or programme*’.

Box 5.2

Learning from Experience: Some Programme Managers’ and Staff Comments

We made some dug wells and ring wells without much communication. After we saw they weren't being used, we realised how important it was to communicate. This was in 2001.

We've re-interviewed some of our old patients. Some are still taking water from their old, arsenic-affected tubewells and 'have no idea'. We were not able to continue meeting them regularly.

It is a big mistake just to test and mark tubewells, and then go away.

In one upazila [our partner organisation] has done most of the construction without getting any user contributions, although they had informal agreements that the people would contribute. Now the people have gone to their MP and are complaining that the project demands money from them.

At first we set up water user committees after installing the arsenic removal units. Now we do it before installing.... The approach has become tighter over time.... We require that they promise in

In interviews with professionals several were kind enough to mention learning from mistakes as shown in Box 5.2. They particularly noted the dangers of *not* following participatory, self-help oriented community approaches. Water sources have, at times, been installed without any explanation given to the people expected to use them; and if they were unfamiliar systems, they were not used or allowed to degenerate. In several cases options have been installed before local people were fully committed to contributing funds, with disappointing results. Several interviewees mentioned that if water user committees are not formed and activated before installation of arsenic mitigation options, they may never become truly involved or have any sense that they are responsible for operation and maintenance.

Making payments and sharing costs, is one form of community 'participation'. A great many people interviewed said that if people (no matter how poor) do not pay for something, they do not value it. A similar lesson forms the basis of many family planning condom-distribution programmes. In some projects, those concerning

arsenic mitigation and other water supply projects as well, a firm commitment by future users to make a financial contribution is required before construction (or installation) can begin.

A project implemented directly by DPHE

4.1

In eight Upazilas covered by the DPHE-UNICEF arsenic mitigation project the local development agent is DPHE itself, rather than a partner NGO. This experiment will be very worthwhile, as DPHE has very limited capacity to conduct any village level activities because of the small number of Upazila office staff and the agency's technical orientation. All experiences of this unusual programme should be carefully evaluated for their learning potential. If successful, this would provide a model for greater DPHE involvement in establishing sustainable, arsenic-free water supplies.

Staff training

4.2

Some documents and personal comments underscore the urgent need to train staff carefully before attempting community-based work on arsenic. In a field that has rapidly expanded and which utilises numerous diverse types of groups to implement programmes, staff training appears to be a weak point. This came out, for example, in an October 2003 workshop organised by NAISU. The workshop participants included several NGOs, journalists, local government representatives and DPHE Sub-assistant Engineers from the Faridpur and Madaripur regions. One of the concluding insights from the workshop was that ‘Most of the personnel working on arsenic issues are incapable to disseminate the arsenic related information at field level’ (NGO Forum and WaterAid Bangladesh 2003b).

At least one evaluation study has made a similar observation: ‘Many of the ‘trainers’ and ‘animators’ had very brief exposure to understand and to consider [how to communicate effectively]; the deficiency of their knowledge on arsenic and possible impacts of arsenic and regarding mitigation were apparent.... Also they had no technical idea how the process of ‘awareness generation’ works’ (Zuberi 2003). These comments raise serious questions about the quality of current programmes and highlight the need to monitor carefully and evaluate objectively all field level activities. They also demonstrate a widespread need for more and better staff training, perhaps in all or most arsenic mitigation projects.

A related issue is the training of Ministry of Health and Family Welfare personnel. Until very recently there was very little knowledge among health professionals about the symptoms or treatment of arsenic-related illnesses. In 2003 the Directorate General of Health Services (DGHS) conducted training on arsenicosis diagnosis and management for approximately 300 doctors. Further training is planned now that a World Health Organization protocol has been completed and approved for use. Some 5000-10,000 copies have been printed. UNICEF and WHO together will contribute to further training for doctors; and BAMWSP plans to conduct some training for doctors in some or all of the 189 Upazilas that it covers. Emphasis in this and other training should be on ‘training of trainers’ in order to broaden the knowledge base among medical professionals (Han Heijnen, personal communication).

As patient diagnoses are to be confirmed with water tests for arsenic contamination, some 150-160 Upazila health centres have been provided with field test kits by the World Health Organization. Training has been arranged for doctors and laboratory technicians in the use of the test kits.

The impact of training efforts requires close scrutiny, as medical professionals are urgently needed to share in solving the public health challenges posed by arsenic in ground water. Indeed, some training might be directed to ways that medical, engineering, and social development specialists can work together to the public’s benefit.

4.3 Using available 'social capital'

As one interviewee, Ms. Qumrun Nahar, mentioned in a group discussion, the Bangladesh countryside abounds with human talent. There are many untapped human resources and networks that represent 'social capital' with great potential to help solve the arsenic problem. Among the population, the trained tubewell testers could build on their existing knowledge base if properly trained and guided. Health and family planning workers are beginning to be involved.

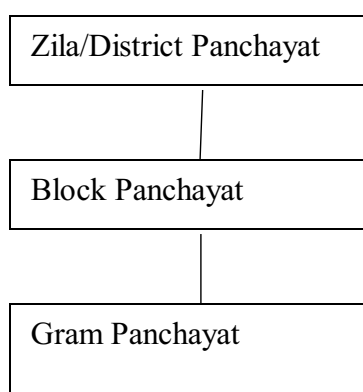
Voluntary organisation members also could help. 'Some influential people are ready to contribute, but they do not know how. We have to identify these people', said Qumrun Nahar, 'and give them responsibility. Ask them how they would like to assist poor people. We think too much about external resources. We must support people in building up their own capacity. Train them about the advantages and disadvantages of various [arsenic mitigation] options'.

6

6.0 CURRENT AND POTENTIAL ROLES OF LOCAL INSTITUTIONS

Decentralisation of services and ‘devolution’ of authority to local government are perpetual themes of public policy discussions in Bangladesh. These themes emerge once again in discussions about the arsenic problem. Various governments have given and then re-claimed control over critical local-level resources and decision-making in a kind of see-saw pattern. India, on the other hand, actually did change its system in the late 1970s to one in which increased authority and resources are controlled by a three-tiered set of directly elected bodies that start at the Mauza/village and go up through the sub-district (Block) to the District, as indicated in Figure 6.1.

Figure 6.1 Elected Local Government Bodies, India



The Union Parishad, Bangladesh’s only elected local government body, covers a territory that is larger than the Indian Gram Panchayat but smaller than the Block Panchayat. (The Mauza is a common unit in both countries: it is the smallest population cluster counted in the census. It typically consists of a few small villages or one or two larger villages).

Programme staff and managers were asked about the present helpfulness of local government bodies. Comments were mixed, both positive and negative, as might be expected. As one programme manager in West Bengal said, ‘It depends on the personalities’. The Bengal Engineering College arsenic mitigation project does not work directly with Panchayats, but they do require a written agreement from the Gram Panchayat in order to install an arsenic removal unit onto a tubewell. All public tubewells are considered the property of the Gram Panchayat. Another West Bengal project, Project Well, takes a different approach. Project Well reportedly ‘always involves’ the Gram Panchayat in setting up a local project. The Gram Panchayat grants permission for the work of project personnel, participates in discussions, and shares in decisions about the siting of mitigation options (Alpana Hira Davidson, personal communication). The arsenic mitigation programme of the All India Institute for Hygiene and Public Health reportedly requires that the community group formed in each project village include at least one member from the Gram Panchayat (Majumder and Kahali 2003:22).

According to one former Public Health Engineering Directorate Chief Engineer, Mr. Priyatosh Mitra, all levels of Panchayat organisation, including the Zila Panchayat, are ‘very

strong and active'. There was not enough time for the present study to go into any depth on the roles of the Panchayats; but even these brief glimpses show that the Gram Panchayat has considerably more resources and responsibilities than the Bangladesh Union Parishad. Roles of the Gram Panchayat and other Indian local government bodies deserve further study, since Bangladesh is likely to develop a similar system in the future.

Union Parishad Chairmen and Members were often mentioned in a positive and hopeful light by interviewees. They were, however, often said to be merely 'informed' rather than included in project activities. Many described them as helpful and involved in efforts to solve local arsenic problems to the extent they were able. One World Health Organization PRA study found that Union Parishad Chairmen and members 'had no idea about the arsenic problem or what to do. When we did the training they felt proud and wanted to learn more' (Khalid Hassan, personal communication). According to a DASCOH staff member (Sultan Mohammad Joinal), getting the Union Parishad involved in arsenic-related problem solving is far more challenging than technical problem solving and installing options.

5.1 A new initiative to activate Union Parishads in some north-western districts

A new Swiss Development Corporation funded programme is starting its field activities in 457 villages of Rajshahi and Chapai Nawabganj districts following a cultural principle of 'asking others' opinions (*motamot*)' as a way to show respect and motivate people, including Union Parishad Chairmen and members. This programme, implemented by DASCOH, will build on a basis of Village Development Committees (VDCs) already established and activated as part of the recently completed Watsan Partnership Project in the same region. The work will be in heavily arsenic-affected areas only. The project, unlike most others, is taking a 'process-oriented approach'. It is hoped that over a period of several years the VDCs will prepare their local action plans with budgets. Multiple issues are to be addressed, not just arsenic problems.

Once these plans are developed, the Union Parishad Chairmen and Members will be asked to contribute by adding their 'opinions'. Those that seem likely to work in a participatory way with their constituents, as represented in the VDCs, will be supported with training and in other ways. It is hoped that in the long term, the Union Parishads will take responsibility for provision of arsenic-free water, and for routine water quality testing as well. Mitigation options may be provided later on, but will not be provided at early stages of the project (Sultan Mohammad Joinal, personal communication). The ultimate goal of the project is to improve local governance in areas with arsenic-related problems.

The urgent need for local water quality monitoring capacity

5.2

The water supply sector in rural Bangladesh is now up against the task of sustaining a remarkably high coverage with the population having access to improved water supply and a very good service level, due to the advent of arsenic in its main source for drinking water. It is also likely to undergo a transition from point sources to community-based systems, which requires a new set of institutional [partnerships], and substantial capacity building (Minnatullah 2003:7).

Solving the arsenic problem is not just a matter of installing mitigation options. It also requires planning for maintenance and continued use of those options, and regular water quality testing. It is not realistic to assume that any remote entity, even an Upazila body, will care enough to maintain any specific rural water source. Rural people must do these jobs themselves. As things are presently set up, however, local government institutions do not have the capacity to face this problem.

Water quality monitoring (for key parameters, including but not limited to arsenic) from now on will be an ongoing need, as noted in Box 6.1. An important question remains: Who will take responsibility for this important new task? It is not appropriate for temporary NGO project staff to take on such responsibility for this new function, which is comparable to basic health or educational services in the necessity to reach all the population in affected areas. A most logical entity is local government; but endowing the Union Parishads with such duties would require great changes in their resource allocations and in their *modus operandi*. There is an urgent need to determine not only *what* to do, but *who* will do it in the most sustainable manner.

Box 6.1

We formerly did not do routine tubewell water quality testing. We assumed that ground water was potable, but now we know it is not true. It is a huge work, to test 1 *lakh* of tubewells, but water quality monitoring is a permanent work burden for us now. (Pradip Kumar De, Chief Engineer, West Bengal Public Health Engineering Directorate)

In one case, at least, genuine local NGOs have taken on this responsibility. In West Bengal, UNICEF has initiated an interesting experiment with village-level water quality testing, using spectrophotometric analysis. Twenty village laboratories have been established on the premises of some established and successful sanitation equipment production facilities, most of them managed by NGOs (two are managed by semi-governmental corporations under the authority of the Panchayat and Rural Development Department of West Bengal.) Laboratory technicians are recruited from among area residents; they are university graduates with chemistry backgrounds. The laboratory technicians have received intensive training and re-training, as needed, from technical staff of UNICEF. Capital costs have been provided by UNICEF, but local people pay for their own water tests. One such facility in North 24 Parganas District was visited by the consultant and found to be fully operational. According to Priyatosh Mitra, a UNICEF consultant, only smaller and very local NGOs would be suitable to manage such facilities. The West Bengal experience with village-level water testing laboratories deserves to be part of the ongoing discussion about ways to develop appropriate methods of water quality measurement in Bangladesh.

Arsenic Mitigation Committees and others

5.3

On 30 November 2000 the Government of Bangladesh issued a Government Order establishing Arsenic Mitigation Committees at three administrative levels: Union, Upazila, and District. A translation of the Government Order is included as Annex 4. The Arsenic Mitigation Committee is one of 23 mandated committees established under such government orders.

Several people interviewed expressed a wish that such committees were more active than they usually are, and a keen interest in identifying how to motivate them. It is probably true, however, that some members of these committees are unaware that their names are on the required lists. Furthermore, if they do try to meet and discuss the arsenic problem, they are not likely to have very clear ideas about it or what they can do. It is even more likely that their constituents, the residents of their wards, do not know about the existence of the committees. Insofar as they do 'meet', it is not as independently active decision-making bodies, but rather as participants in routine Union Parishad meetings or at Upazila meetings chaired by a UNO (World Health Organization and UNICEF Bangladesh 2003). This can lead to problems noted in Box 6.2

Box 6.2

Government has done a big job by making this proclamation, but it is not functioning. Maybe government should make another proclamation to make the committees active.

Some union parishad chairmen we have met say they don't know what to do. If there is any demand from the community, they try to stop it, to avoid them, because they don't know what to do.

--Two people's comments
in a group discussion

Two specific measures are needed to make these committees effective agents. One is to provide them with sufficient information and support, to build their capacity to help their communities. The other is to resolve possibly confusing differences with Water and Sanitation Committees. The main problem in bringing the two together is that both are mandated to work on domestic water provision. It is not likely that a typical union will have enough community leaders to fully activate both committees in parallel, not to mention the other 21 required committees. Another problem is that the two types of committees have been set up in different ways. The WATSAN committees are to be formed in a three-tiered Union, Upazila, and District system, whereas the Arsenic Mitigation Committees are set up to work in four tiers: Union, Ward, Upazila, and District.

Detailed considerations aside, it surely must be difficult for a Union Parishad to set its own agenda and work in a self-help style when it is burdened with so many instructions from the governmental bureaucracy. The Bangladesh system as it stands, with the general lack of support for development of local institutional expertise and operational ability, tends to defeat the creation of meaningful public participation in important decisions relating to the arsenic problem.

7

7.0 CONCLUSIONS AND RECOMMENDATIONS

This study has consisted of one consultant undertaking a literature review and discussing the social aspect of the arsenic problem with more than 50 professionals in Bangladesh plus others in West Bengal over a three-week period.

In order to solve the arsenic problem in the long term, it will be necessary for intervention agents to adopt a *social change perspective*. It is not enough to have elite professionals from outside come in and meet with elite members of rural society, virtually all males. A bolder approach is needed to community mobilisation, one which includes women of all socio-economic levels, and one which seriously tries to address the perceived needs of poor sections by actually talking with the poor.

The Bengal Delta region's arsenic problems are bringing up a need to *decentralise* key services to the most local possible level, which at present is the Union in Bangladesh and the Gram Panchayat in India. *Devolution of authority, capacity-building, and endowment with adequate resources* are essential to the success of any such effort. Many are skeptical, but transparency and accountability can reduce chances of problems, as Minnatullah (2003) has argued. Union Panchayat Members and Chairmen have been found in many places to need information and training. Providing this would help to motivate them to help the people of their localities to solve any arsenic-related problems. Local government, especially the Union Panchayat - both Chairmen and ward Members, especially female ward Members - should receive adequate training and motivation to enable them to guide local-level arsenic related efforts. In order to improve programme coordination, the Union Parishad Members (once trained and motivated) should be the focal point and should have adequate authority to have the final word on what happens in their unions. Their responsibilities could include oversight of local-level water quality testing.

Prevalence of arsenic-related illnesses needs to be considered in the light of overall morbidity rates in the population. There are problems in making such comparisons, given the lack of a national arsenicosis prevalence study. For instance, in one study in an area where the population were drinking water with arsenic concentrations over 50 µg/l, the prevalence of arsenicosis among men (10/1000) was similar to the national prevalence of dysentery (around 9/1000), although women had a much lower arsenicosis prevalence. However, such comparisons can be misleading in the sense that specific areas may be more affected by dysentery and have higher local prevalence rates. Nonetheless, epidemiological studies, most of whose data are yet to be published, already show that highly exposed populations are developing health problems associated with arsenic toxicity. The poor are affected to a far greater extent than non-poor; and prevalence of acute symptoms is much higher among males than females.

Two kinds of arsenic-affected situations exist at present. One is the 'hot spot', where patients are many and suffering is acute and widespread. 'Hot spots' can be whole villages or certain sections (*paras*) of villages – often the sections where most families are poor. The needs of such populations (for safe water, medical attention, and other coping strategies) are very clear, and local receptivity to interventions may be strong. The second type of situation is

more common at present. High arsenic concentrations in drinking/cooking water put large populations at risk for arsenic-related illness, but there are no visible signs of arsenic-related illness. If the public does not recognise that there is a problem, these kinds of situations challenge programme staff to develop preventive approaches and raise awareness, hopefully motivating people to protect themselves. Both situations receive priority attention in current mitigation projects; but the needs of the two types differ, so strategies also should be different.

Virtually all arsenic-related interventions are in rural areas. Urban areas, where many still use privately owned shallow tubewells, deserve programme attention as well.

Nine challenging social issues were repeatedly mentioned in discussions with professionals. Many of these also were mentioned in documents reviewed:

1. Raising public awareness to a level that people are motivated to change drinking and cooking water sources;
2. Difficulties of identifying safe, affordable, and convenient alternative water options;
3. Guiding people in self-help activities;
4. The shift from household-based tubewell use to community-based water sources;
5. The ambiguous position of the Union Parishad in arsenic mitigation programmes and the need for more decentralisation of service provision, including water quality management;
6. Developing a comprehensive, multi-faceted approach to the arsenic problem and forming systems in which medical, social development, and technical services are well coordinated;
7. Including women and the poor in local-level planning processes; making these processes fully participatory;
8. Weaknesses in staff training; and
9. Economic, social, and health problems of arsenicosis patients.

These and other issues raised in this report deserve further attention among all stakeholders – government, donors and people most affected by the problem of arsenic in domestic water. The work of many agencies and groups is now done without much coordination from others. If research findings and programme experiences were shared in strong professional/regional networks, information sharing would benefit services over-all. *Local or regional* information sharing is probably more urgently needed than sharing in Dhaka, which occurs naturally to a large extent as the same people attend numerous meetings.

In educating the people on arsenic related matters, we should not make the same mistakes that were made in the past in promoting tubewells. People should be made to understand what safe water is, and alternative ways to get it. *Spreading a high standard of information about what is 'safe water'* is essential. The way it should be done is evident from many programmes' experience in water and sanitation and other fields. People should be taught that water is not as simple as many think, and there is a lot to understand and think about. A collective knowledge base has to be developed for sustainability at the community level. Given opportunities to learn, the public should be expected to discuss this issue on its own. It is hoped that awareness of arsenic-related risks will someday be as widespread as knowledge of oral saline treatment for diarrhoea is now. Messages should promote widespread understanding, not fear. Knowledge should not be restricted to influential individuals, committee members, or literate people. Those who do understand can teach others; and the

more motivated (which will include some illiterate people) should have access to any and all information they think they need.

Further recommendations

6.1

7.1.11 Knowledge gaps

Nothing systematic at all is known about the situation of girls. They seem to be the most neglected and the most socially vulnerable of all types of people who are affected by arsenic. Careful investigation of girls' situations is needed, to see what can be done to improve their chances of getting attention from health services and access to arsenic-free water. Schooling is a girls' strategic need related to improving their overall social status.

The actual priorities and levels of awareness of people living in arsenic-affected areas but not showing many arsenicosis symptoms deserves further study. Their interests and concerns could be easily identified by PRA types of methods. Such investigations, probably already undertaken by organisations focussed on community mobilisation, would help to bring out the public's perspective on the arsenic problem. Knowledge of where the arsenic issue ranks in the overall perception of priorities could help to tailor programmes closely to people's perceived interests.

More information is needed on the general relationship between arsenicosis risk and dietary habits and general nutrition. It is hoped that the epidemiological studies in progress (such as those being conducted by Columbia University and ICDDR,B) will provide relevant information. More information, both quantitative and qualitative, is needed, in order to understand why low socio-economic status is so strongly associated with high risk of arsenic-related illness.

Further analysis is needed on the subject of the differing arsenic-related social and health concerns in the broad context of male-female status and relationships. Gender differences among poor, middle class, and rich people affected by arsenicosis should be studied separately. The attitudes of both men and women toward women's illnesses and health care service utilisation should be investigated.

It will be important to know more about gender differences in arsenicosis prevalence rates (higher among men) as compared to 'prevalence odds risks' (possibly higher among women), as discussed briefly in Section 2.

7.1.12 Practical and strategic matters

In 'hot spots', where there are many people affected by arsenic-related illness, it is essential to provide as much health care and information as possible as soon as possible. As many such severely affected populations are poor and illiterate, information and help needs to be provided in a way that people can understand and make use of it.

It is essential that sustainable ways of doing repeated water quality testing be developed for rural areas and also for urban area residents using shallow tubewells. There are various ways of approaching this problem. It can be put in the hands of the Union Parishad. Or it can be managed by sincere local organisations operating laboratories of the type UNICEF has established in West Bengal. Or it could be in the hands of entrepreneurs – perhaps trained

tubewell testers provisioned with field test kits and ensured of a steady market supply of affordable and reliable kits. However it is done, some way must be found to conduct this service within rural areas themselves, so that people will have access and actually use it.

Staff training for all types of programme groups needs further attention. There should be a big push to ensure that everyone who meets the public knows how to communicate and has adequate information about arsenic, its sources, and its effects on the human body.

It is generally agreed that there is a great need for improved monitoring of all types of arsenic mitigation services, both governmental and non-governmental. Objective evaluation studies should be done regularly and widely distributed, so that everyone can learn from programme experiences.

The arsenic awareness campaign has begun in Bangladesh, but it still needs improvement. There is a need for approaches that are sure to reach the poor and women, who tend to be less well educated than the more affluent and men.

The key to improving public compliance with safe water use is to include women in decision-making processes about mitigation options and to introduce options in ways that they will find convenient, affordable, and contributory to their families' well-being and comfort. Experience from programmes that do include women can provide guidance on how to bring women into public decision-making processes. Some simple suggestions are to do the following¹:

Engage women staff to work at the field level and support their work with conveyance assistance and other security arrangements.

When entering a new working area, meet women and men separately, and use some PRA (or similar) techniques to ensure that both women's and men's ideas and preferences concerning domestic water are documented.

Women can be consulted in courtyard sessions; and it is recommended to invite them to one-day workshops, perhaps in an Upazila town, with conveyance provided, so they can talk without being interrupted. It will be virtually impossible for women to attend public meetings in bazars or market places; so decision-making meetings should not be held in such places.

If men and women are meeting separately, the organisation implementing the programme should present women's views to men as deserving of attention and consideration, while also soliciting men's opinions about the same matters. Facilitate mutually respectful communication.

Eventually in many areas it will be possible to recruit women to join decision-making committees, and the implementing organisation should strongly urge their inclusion.

¹ Many thanks to Begum Shamsun Nahar for helping with these suggestions.

Female Union Parishad members in many cases will be willing and able to help as catalysts in engaging women as decision-makers, if they themselves are well enough informed about the local arsenic problem and are supported in doing so.

Do not install mitigation options or dig new, reserved ponds in or next to rural markets or bazaars. Very few women would go to such places for any reason.

In general it is recommend that every effort be made to promote a self-help, self-confident approach to the arsenic problem and safe drinking water in the Bangladesh countryside. This problem is so vast, that it can only be solved with the full and active participation of all, whatever their position in the social or administrative hierarchy. The need for smoothly coordinated and collaborative efforts has been recognised in the *National Policy for Arsenic Mitigation* (GOB, 2004). Making this idea a reality is a great challenge, but the human resources are available to meet it if carefully developed and encouraged.

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² An email message was sent by Suzanne Hanchett to UNIDO requesting information on this report, 12 June 2004. Message sent to C.Gurkok@unido.org. Mr. Sengupta now may be posted at WHO Southeast Asia Regional Office, New Delhi.

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0 8.6 Ph.D. research in progress

- 1) Ph.D. candidate: Farhana Sultana
Topic: Gender and class issues in the arsenic crisis
University: Department of Geography, University of Minnesota

- 2) Ph.D. candidate: Alpana Hira Davidson
Topic: Case studies of three arsenic-affected villages in West Bengal
University: Department of Geography, Calcutta University

ANNEX 1: TERMS OF REFERENCE

REVIEW OF THE SOCIAL AND SOCIO-ECONOMIC ASPECTS OF ARSENIC CONTAMINATION OF GROUNDWATER

CONSULTANT TERMS OF REFERENCE

Background

Arsenic contamination of shallow groundwater in Bangladesh is a significant environmental and public health problem. It is estimated that in the region of 30% of the 10 million tubewells sunk in Bangladesh have arsenic concentrations exceeding the Government of Bangladesh standard or 50µg/l. The pattern of arsenic contamination is highly variable, with often significant variation within and between adjacent villages. However, contaminated tubewells have been identified in a large number of Upazillas, with 268 out of 464 identified as particularly affected areas. Arsenic leads to a number of health problems, including keratosis and melanosis in the early onset stages and cancers in the longer-term. The symptoms of the effects of arsenic are usually referred to as arsenicosis. Current estimates indicate that 17,000 cases of arsenicosis have been identified to date, although there is potential for much larger numbers of people to be affected.

The response to arsenic contamination of groundwater has been undertaken by a number of Government, NGOs and donor funded projects. To date the responses have prioritised the screening of tubewells and marking them as safe or unsafe with respect to arsenic and in awareness-raising about arsenic. The provision of arsenic-safe water sources has progressed far less quickly, in part because of ongoing delays in the approval of the recently submitted National Policy for Arsenic Mitigation and the associated Implementation Plan. A range of options have, however, been identified as appropriate including dug or ring wells, deep tubewells, surface water options, rainwater and arsenic removal technologies. Many of these options have been installed on a pilot basis in a number of communities. There is also increasing interest in the development of piped water schemes in rural areas.

There are a number of social consequences related to arsenic contamination of groundwater. People with arsenicosis may face social stigmatisation, a problem that has been noted in a number of villages. Although awareness-raising activities have focused on trying to reduce stigmatisation, it is clear that this remains a problem. Stigmatisation includes problems with marriage for affected people (particularly women) and social exclusion. Other social issues are also of importance. For instance, effort has focused on encouraging communities and households to share arsenic safe tubewells where these existed in a community. Although initial success is often noted, a number of projects have reported that this is difficult to sustain and in particular poor households may be excluded from use of arsenic safe sources in the compounds of wealthier families.

In terms of mitigation options, many of those available are provided at a communal rather than a household level. This has resulted in increases in time and distance for water collection and increased the burden on women and girls. A number of the mitigation options available are relatively expensive and it is unclear whether poor households will be able to afford to purchase water from such sources. There is therefore a risk of exclusion of poor households in mitigation efforts on financial grounds. For piped water, a recent willingness to

pay survey was undertaken by the Water and Sanitation Program of the World Bank. Although this demonstrated a high level of willingness to pay, the study did not address ability to pay and in particular did not address issues of livelihoods and fluctuation in incomes and the impact this may have on ability to pay each time a water bill is presented.

A number of organisations have included assessment of some aspects of social and socio-economic impacts of arsenic contamination, however, this remains unconsolidated and often retained within the organisation and not shared with GOB. In recognition of the importance of social and socio-economic aspects of arsenic contamination, the Arsenic Policy Support Unit (APSU) in Local Government Division with funding from DFID is seeking a consultant to produce a systematic review of work undertaken to date in these areas and to identify areas where further work is required. This review will be provided to Local Government Division as a means of identifying priority areas for the Government of Bangladesh in arsenic mitigation.

Terms of reference for the consultant

The consultant will be expected to undertake the following tasks:

- 1) Interview key organisations (GO, NGO, development partners, academia) involved in arsenic mitigation to find out what previous, current and planned activities or research is planned into social and socio-economic aspects of arsenicosis.
- 2) Undertake a systematic review of published and grey literature available in Bangladesh on social and socio-economic aspects of arsenic contamination in groundwater.
- 3) Undertake a review of published and grey literature on experiences from other countries of social and socio-economic aspects of arsenic contamination in groundwater. This will include a three day visit to Kolkatta to interview and review with key organisations research undertaken into the social and socio-economic aspects of arsenic.
- 4) Produce a report providing a summary of the information drawn from above and the key lessons learnt.
- 5) Identify any major gaps in knowledge regarding socio-economic aspects of arsenic and suggest how these may be filled.
- 6) Prepare recommendations for addressing socio-economic aspects of arsenic contamination and its mitigation, including a research plan if appropriate.

Expected outputs

Draft and final reports providing a summary of all research and interventions that have included socio-economic aspects of arsenic within Bangladesh and elsewhere, providing information regarding key lessons learnt and major gaps in knowledge. The report should provide recommendations for future mitigation programmes to address socio-economic aspects and to identify a research plan to address major knowledge gaps.

Expected timeframe

It is expected that the consultant will require no more than 3 weeks to complete this work and will submit a draft report for review by APSU by the end of June 2004. A final report will be submitted taking into account the comments from APSU by the end of July 2004. Electronic copy plus three hard copies of the final report will be submitted.

7.1.11 Consultant specification

The consultant should be a social scientist or social development professional with relevant research experience within Bangladesh. Knowledge of the water sector and arsenic in particular will be an advantage. The consultant will be expected to base the review on existing information available in key arsenic mitigation programmes and NGOs undertaking arsenic related work and literature review. It is not expected that any fieldwork will be required. In addition to the consultant, an allowance will be made for a translator to provide support to the consultant to ensure that the content of all relevant documents is available in English.

ANNEX 2: PEOPLE MET

LIST OF PEOPLE INTERVIEWED

1. Aasma Afroz Shathi, Research Officer, Matlab Project, ICDDR,B
2. M. Feroze Ahmed, Ph.D., Professor at BUET & Project Director, International Training Network Centre for Water Supply and Waste Management
3. Afzalunessa, Training Specialist, Bangladesh Arsenic Mitigation Water Supply Project
4. Md. Akhtaruzzaman, Media/Consultant Specialist, Bangladesh Arsenic Mitigation Water Supply Project
5. Shireen Akhter, M.S.S., Planning Alternatives for Change
6. Alauddin, MBBS, Medical Officer, Columbia University Arsenic Cohort Study in Bangladesh
7. Ayesha Hussain, Emergency Program Coordinator, Bangladesh Arsenic Mitigation Water Supply Project
8. Abu Shahjalal Azad, Consultant (Arsenic), WES Section, UNICEF Bangladesh
9. Azahar Ali, DPHE-Danida Water and Sanitation Project
10. H.K. Banik, Coordinator, Eight-upazila DPHE arsenic mitigation project (2003 interview)
11. Begum Shamsun Nahar, Gender and Development Specialist, Small Scale Water Resources Development Sector Project (SSWRDSP), LGED
12. B.K. Bhattacharya, Assistant Chief Engineer, Public Health Engineering Directorate, Government of West Bengal, India
13. Shaha Bilquis, MIS Officer, Bangladesh Arsenic Mitigation Water Supply Project
14. Jiptha Boiragee, Project Coordinator, Arsenic Project, DASCOH
15. Dr. Dipankar Chakraborti, Director, School of Environmental Studies, Jadavpur University, Kolkata
16. Alpna Hira Davidson, Professor of Geography, Shibpur Dinobundhoo College, Howra, West Bengal & Project Well
17. Pradip Kumar De, Chief Engineer (WQM), Public Health Engineering Directorate, Government of West Bengal, India
18. Paul Edwards, Chief, WES, UNICEF-Bangladesh
19. Mr. A.K.M. Fariduzzaman, Project Engineer, Arsenic Mitigation Project, Gono Unnayan Proteshto (GUP)
20. Dr. M.H. Faruquee, Deputy Country Representative, Asia Arsenic Network (Dhaka)
21. Dr. Farzana Begum, Project Officer, Public Health Sector, Dhaka Community Hospital
22. Mr. Carel de Groot, Sector Program Coordinator, Danida Sector Program Support Office
23. Dr. Anirban Gupta, Director & Principal Investigator, Project to Remove Arsenic from Village Drinking Water Supplies, India; Bengal Engineering College, Department of Civil Engineering, Howrah, West Bengal
24. S.M.A. Hanifi, Matlab Project, ICDDR,B
25. Mr. Kamrun Hassan, Project Manager, Arsenic Mitigation Project, Gono Unnayan Proteshto (GUP)
26. Mr. A.F.M. Khalid Hassan, Program Officer, World Health Organization (Environmental Health and Sanitation Office)
27. Md. Sazzad Hossain, Training Specialist, NGOs Arsenic Information & Support Unit (NAISU), NGO Forum and WaterAid Bangladesh

28. Mr. S.M. Ithishamul Huq, Executive Engineer, Programme & Coordination, Department of Public Health Engineering
29. Md. Javed Yousuf, Project Director, Dhaka Community Hospital
30. Kamruzzaman, Assistant Engineer, Rural Water Supply, Department of Public Health Engineering (and Bangladesh Arsenic Mitigation Water Supply Project)
31. Fatema Mannan Lubna, Training Officer, NGOs Arsenic Information & Support Unit (NAISU), NGO Forum and WaterAid Bangladesh
32. Mahfuzar Rahman, Ph.D., Arsenic and Environmental Epidemiologist, Public Health Sciences Division, ICDDR,B
33. Priyatosh Mitra, Consultant, Arsenic Mitigation, UNICEF-Kolkata
34. Mohidul Hoque Khan, Managing Director, Pathway Consulting Services & Member of Bangladesh Poribesh Andolon (BAPA)
35. Joy Morgan, Social Development Officer, WES, UNICEF Bangladesh
36. Sampa Mukherjee, Deganga (Deulia Village, Deganga Block, North 24-Parganas District) Office & Sani-Mart, West Bengal Comprehensive Rural Development Corp.
37. Munir Ahmed, Program Co-ordinator, BRAC Health Program
38. Umme Muslima, Gender Specialist, Bangladesh Arsenic Mitigation Water Supply Project
39. Nasima Akter, Ph.D. Coordinator, Environmental Research Unit, Research and Evaluation Division, BRAC
40. Nasima Akter, Project Coordinator, NGOs Arsenic Information & Support Unit (NAISU), NGO Forum and WaterAid Bangladesh
41. A.F.M. Nezam Uddin, Monitoring Officer, NGOs Arsenic Information & Support Unit (NAISU), NGO Forum and WaterAid Bangladesh
42. Qumrun Nahar, Program Officer (WES), UNICEF-Bangladesh
43. Prof. K.J. Nath, Chairman, Arsenic Task Force, Government of West Bengal
44. Mr. Lutfar Rahman, Senior Social Development Officer, Department of Public Health Engineering
45. Ms. Savitri Roy, Coordinator, Training Department, Dhaka Community Hospital
46. Dr. Ziaul Hasan Rumi, Technical Specialist, NGOs Arsenic Information & Support Unit (NAISU), NGO Forum and WaterAid Bangladesh
47. Rajoshi Shaha, Technical Officer, West Bengal Comprehensive Rural Development Corp.
48. Shafiqul Islam, Team Leader, Arsenic Unit, UNICEF-Bangladesh, Water & Environmental Sanitation
49. Syed Shafique Ahmed, General Secretary, Citizens Forum on Water and Sanitation Initiatives in Bangladesh
50. Shah Noor Mahmud, Sector Specialist, BRAC Health Programme
51. Md. Adubakr Siddique, MBBS, Medical Officer, Columbia University Arsenic Cohort Study in Bangladesh
52. Sultan Mohammad Joinal, project Coordinator, DASCOH, Sustainable Solutions for the Delivery of Safe Drinking Water
53. Md. Tariqul Islam, MBBS, Project Director, Columbia University Arsenic Cohort Study in Bangladesh
54. Mohammad Yunus, MBBS, Senior Scientist and Head, Matlab Health Research Programme, ICDDR,B
55. Mr. Ziaul Islam, Project Manager, Industry Health, School Health, and Family Health, Dhaka Community Hospital
56. Muhammad Iqbal Zuberi, Ph.D., Professor, Department of Botany, University of Rajshahi

Acknowledgements

1. Dr. Abbas Bhuiya, Head, Social and Behavioural Sciences Unit, ICDDR,B
2. Mr. Khoda Bux, P.D., Bangladesh Arsenic Mitigation Water Supply Project
3. Mr. Somnath Basu, Chief, Water & Environmental Sanitation, UNICEF, West Bengal
4. Sudipta Barman, Bengal Engineering College, Kolkata
5. Mr. Priyatosh Mitra, Consultant, UNICEF West Bengal
6. Paul Edwards, Chief, Water & Environmental Sanitation, UNICEF, Bangladesh
7. Dr. Muhammod Abdus Sabur, Health & Population Sector Manager, DFID Bangladesh
8. Meera Hira Smith, Project Well
9. Dr. W. Abdullah Brooks, Health & Child Survival Advisor, ICDDR,B
10. Mohidul Hoque Khan, Bangladesh Poribesh Andalon/BAPA
11. Shireen Akhter, Planning Alternatives for Change
12. Begum Shamsun Nahar, Gender and Development Specialist, Small Scale Water Resources Sector Development Project (SSWRDSP), Local Government Engineering Department/LGED

ANNEX 3: BIGGEST CHALLENGES

Annex 3

BIGGEST CHALLENGES IDENTIFIED BY EXPERTS

June 2004 Interviewees' Comments on 'Biggest Challenges' (social) facing those concerned with problem of arsenic in drinking water; Bangladesh and West Bengal comments. Estimated number of people responding to this question in Bangladesh was 35 and in West Bengal, 7 (in both group and individual interviews). Many mentioned more than one issue.

Summary and rough tally of responses, by Suzanne Hanchett, based on detailed interview notes:

'Biggest Challenge': Specific Comments	Number (multiple responses)	
	B'desh	W.B.
1. Raising public awareness		
Raising public awareness levels: 'motivating people' to consistently use arsenic-free water; Making people understand what arsenic is, and how arsenic affects the body; Making people understand that they could be harmed if they haven't met patients or seen people die from arsenicosis; people don't understand hidden toxic effects of arsenic; Educating people about their geology Insufficient public demand (from people or elected representatives) for safe water and mitigation measures; People are too complacent	10	
Lack of immediate, visible health effects reduces public's interest in the arsenic problem. People haven't seen many patients, and almost never have seen arsenic-related deaths; so they don't feel as concerned about this as they do about diarrhea or dysentery.	2	
Weak public response to efforts to promote mitigation options despite meetings & subsidies, or even distribution of free equipment; Changing behavior (compared to introducing tubewells initially, HIV/AIDS, vaccinations); getting people to start drinking safe water It's easier to promote latrine use, because it's not an entirely new concept.	5	
Persuading people to use safe water for cooking, not just drinking	1	1
Reversal of messages about 'safety' of tubewell water; 'Behavioral reversal'; Overcoming people's sense that having/using a tubewell is high-status; Same 'messengers' communicating opposite messages	3	
Guiding people to do 'something different from the past' according to their choices	1	
Promoting awareness among poor people , who tend to be poorly educated and have many other priorities	1	
Getting illiterate people to understand , rather than depending on		

others to interpret messages. (Many women and poor people are illiterate); changing poor people's 'mind-set'	4	
Explaining arsenic without using the word 'poison' (<i>bish</i>)	2	
Guiding people to do 'something different from the past' according to their choices		
Persuading people to pay for water, since they've become used to getting it for free		
If people don't pay for something, they don't value or take care of it;		
2. Safe water options & Tubewell screening		
Lack of standardized tubewell testing kits/ methods; different testers give different results	3	
Lack of any one feasible safe water option that will suit all situations; How to provide people with alternative sources of safe water that they can <i>afford</i> and will actually use. Arranging safe water options that poor people can afford & supporting them in getting/using them. Getting safe water options to the people. Getting people to accept options.	7	
User-friendly technology; options that suit needs in a particular place; water that tastes good; Convenient, preferably household options needed. Building demand for available options	3	1
Increased responsibility of women when distant/new sources are used	1	
Developing mitigation options that will out-last our programme intervention (sustainability)	1	
3. Promoting a self-help attitude		
Figuring out 'how people themselves can solve their own problems;' helping people to 'develop confidence in themselves,' and to realise that they can't get something for free. Community should raise their own needs. Community mobilization	6	
4. Shift to Community-based systems		
Shift to community-managed water sources from household-based sources; need for 'community mobilization'; Actually <i>activating</i> committees, rather than just forming them. Make local O&M sustainable through some permanent local arrangement after paid NGO staff stop working in an area. Who will take care of the things we've installed after we leave?	6	
Need for continual water quality testing after intervention programmes are phased-out Figuring out how to get domestic water tested at convenient locations	1	3
Making use of available 'social capital' to solve the problem and improve general awareness	1	
Too few masons now, who know how to install dug wells	1	
5. Governance and policy		
Decentralization - a basic issue here; UP's lack of knowledge, role, or authority in arsenic mitigation; Inactivity of many arsenic mitigation committees: need to activate	5	

them.		
Panchayats: have authority and help in some places; but are too target-oriented and less focused on quality		1
It would be wise to separate policy-making & policy-implementation agents in Bangladesh	2	
6. Comprehensive and coordinated approach needed		
Information-sharing among different programmes/projects; we need to share information on 'best practices' There should be a 'single stream of communication'.	3	
Arsenic is a three-part problem: geological, medical, and social A 'comprehensive approach is needed.' 'Coordinating technical and community aspects' 'Cross-cutting issues' not getting enough attention. 'Mistrust is the root of many coordination problems': NGOs, gvt, different gvt agencies, etc. don't trust each other	5	
Developing a 'coordinated approach' to water resource management & related environmental issues; not over-using water from deep aquifers; Respecting nature.	1	1
Forming a strong connection between health and engineering is difficult in a working environment that is very 'project-based.'	1	
6. Participatory planning needed		
Setting up a genuine, participatory decision-making system that includes all -- poor people, women: it's really not happening. This is a A program organization challenge.' Avoiding elite domination. Local-level institutional development	3	
The 'voice of the poor is not heard. They get charity but deserve more than that.'	1	
Giving attention to remote villages, where few NGOs actually go & the largest almost never go.	1	
Women's views not considered most of the time; women not visible in public planning meetings; Community mobilization that includes <i>both</i> men and women; Women not involved in decision-making or contributing funds	4	
Creating intervention programs that are not constrained by inappropriate requirements, and not overly target-oriented or bureaucratic.	1	
Building trusting relationships with local people: can take a year or more	3	
8. Building organisational capacity		
Learning from experience; supporting and studying demonstration projects; Impartial evaluation studies needed; Spot checks (unannounced) needed to monitor NGO field activities;	1	
Supervision and monitoring too weak in all government programmes	1	
Better staff training, based on 'evidence-based messages,' not just 'orientations.' Many without expertise are working in the field, but arsenic requires 'a specialized person.'	5	
It has been difficult (but possible) to train rural university graduates as		1

laboratory technicians in village-level water quality testing labs		
Raising gender awareness within BAMWSP	1	
9. Arsenic-related illnesses: social consequences of		
Facing the massive public health challenge posed by such a large population at risk of arsenic poisoning.	1	
Not 'panicking' when arsenic-related illness is diagnosed	1	
Social acceptance of arsenicosis patients	1	
Some patients are starving; cannot afford medical care		2
Mitigation & patient management; Identifying those with skin lesions and getting them the care they need	2	
Young/adolescent girls not likely to be covered by health-camp patient identification activities, because they don't go into public places/crowds.		1
Reduced activity and productivity of people with arsenicosis	1	
Study is needed, of which types of people are most affected. We did screening without taking socioeconomic status into account.	1	
10. Over-all comments about arsenic related activities, approaches		
More action, less talk	1	1
'We're working in a system that is not prepared to take social aspects into consideration.'	1	

**ANNEX 4: GOVERNMENT ORDER ESTABLISHING ARSENIC
MITIGATION COMMITTEE**

Annex 4

GOVERNMENT ORDER ESTABLISHING ARSENIC MITIGATION COMMITTEES

The following is an English translation from the original Bengali November 2000 Government Order establishing arsenic mitigation committees at each administrative level. It is provided here to clarify the Government's original concept of the arsenic mitigation committees' composition and functions. [Translation copied from World Health Organization and UNICEF Bangladesh 2003, Annex 4]

Letter issued by: People's Republic of Bangladesh, Cabinet Division, District Administration 4th Branch

Date: 30 Nov. 2000 (Bengali date: 16-08-1407/B)

NOTIFICATION

To solve the arsenic problems in the country, action research project has been started. In first phase activities included survey work, patient identification, committee formation at different levels: ward, union, upazila, district, [to promote] mitigation activities.

1) At Ward Level Arsenic Mitigation Committee

- 1) Woman Ward Member: Advisor
- 2) Ward Member: President
- 3) Health Worker: Member
- 4) Block Supervisor [DAE]: Member
- 5) Ansar VDP: Member
- 6) Imam: Member
- 7) Freedom Fighter: Member
- 8) Teacher Representative: Member

Activities of this committee will be: This committee will select a Member Secretary from among the members. If needed, they can include two more members in the committee [meaning: some prominent local persons].

This committee will help:

- a) To help the people to identify patients & to survey family tubewells
- b) Select the time for training of the local workers who will do tubewell screening
- c) After completion of the training, the committee will implement tubewell testing and patient identification activities
- d) Conduct awareness campaign about arsenic contamination of the water
- e) Arrange mitigation options for their villages in arsenic contaminated areas
- f) Miscellaneous other works.

2) Union-level Arsenic Mitigation Committee

Members:

- 1) UP Chairman: President
- 2) All women Members: Members (3)

- 3) All UP Members: Members (9)
- 4) Assistant Health Inspector: Member
- 5) Family Planning Inspector: Member
- 6) Teacher Representative: Member
- 7) Ansar VDP Leader
- 8) Freedom Fighter (1)
- 9) Secretary of UP: Member Secretary

An additional two members may be included, if needed.

Activities of this committee:

- a) Organize to fund the ward-level committees and supervise them
- b) Plan to survey ward-wise and implement activities
- c) Help the ward committee to mitigate the arsenic problem
- d) Coordinate with the upazila-level arsenic mitigation committee
- e) Any other miscellaneous activities needed.

3) Upazila Arsenic Mitigation Committee

Members

- 1) UNO: President
- 2) All UP Chairmen: Members
- 3) Health and Family Planning Officer: Member
- 4) Uz Agricultural Officer: Member
- 5) Uz Statistical Officer
- 6) Uz Education Officer
- 7) Social Welfare Officer
- 8) Ansar/VDP, Uz Officer
- 9) Teachers Representatives (2 - one male, one female)
- 10) Freedom Fighter (1)
- 11) DPHE SAE: Member Secretary

If this committee wishes, two additional members may be included from those persons who are very renowned at the upazila level.

Functions

- a) This committee will ensure the arsenic mitigation committees at ward and union levels: follow-up on them, [be sure they exist, etc]
- b) All types of support will be provided to the union-level committee for mitigation of arsenic problem
- c) This committee will coordinate and monitor the union-level arsenic committees
- d) They will coordinate with the district-level arsenic mitigation committee.
- e) Miscellaneous other works.

4) District Level Arsenic Mitigation Committee

Members:

- 1) DC: President
- 2) Police Superintendent: Member
- 3) Civil Surgeon: Member
- 4) Deputy Director, Agriculture Department: Member
- 5) Executive Engineer, LGRD: Member
- 6) Deputy Director, Social Welfare Department
- 7) Zila Information Officer: Member
- 8) Zila Statistical Officer
- 9) Zila Education Officer
- 10) Zila Ansar/VDP Officer
- 11) All pourashava chairmen under the district
- 12) All UNO's under the district
- 13) Zila Women's Affairs Officer
- 14) Teachers Representatives (2)
- 15) Freedom Fighter (1)
- 16) Executive Engineer, DPHE: Member Secretary

Two additional members, one male and one female, can also be included. The District Educational Officer will select the two teachers representatives. The Freedom Fighter will be recruited by the District Freedom Fighter Commander.

Functions

a) This district level committee will ensure that arsenic mitigation committees at the upazila level are formed by all UNOs.

b) This committee will coordinate and organize arsenic mitigation activities. It will decide what activities are to be done.

c) They will coordinate and monitor all arsenic related activities

d) They will perform and implement all related activities.

2) The above committees will meet together when needed.

3) For implementation of survey activities, all the committees will follow the guidelines prepared by Arsenic Mitigation and Water Supply Project.

4) This decision will come into effect.

Signed by: Md. Abdus Sattar, Joint Secretary

ANNEX 5: WATSAN CIRCULAR

Annex 5

THE REVISED CIRCULAR

Government of the Peoples Republic of Bangladesh

Ministry of Local Government, Rural Development and Cooperatives
Local Government Division
Pass Section

CIRCULAR

No. LGD/PoKho/1/NL-11/99/875

Date: 20.11.2002

The government has decided to set up Water and Sanitation (WatSan) Committees at District, Upazila and Union levels of the country through the Department of Public Health Engineering (DPHE), to further strengthen the sanitation, hygiene and safe water supply programs of the government and making the programs more community based. These Committees will be based at respective local government organizations or local administration at district, upazila and Union levels.

In the beginning, such committees will be set up in the project districts of the Environmental Sanitation, Hygiene and Water Supply in Rural Areas Project (GoB-UNICEF Project) of DPHE. The committees would be formed in other districts later under specific programs. Implementing agency, with approval of the ministry, may change or modify the structure and functions of the committees if required.

FORMATION PROCESS OF WATSAN COMMITTEES

Deputy Commissioners, Upazila Nirbahi Officers and Union Parishad Chairpersons will, upon request of DPHE and with their collaboration, form district, Upazila and Union WatSan Committees respectively. The district committees in the CHT would be formed by the Hill District Councils. The DCs, UNOs and UP chairmen will head the district, upazila and union committees respectively in the plain land districts. In CHT districts, HDC chairmen will head the district Committees while upazila and union committees would be headed by the UNO and UP Chairmen respectively.

The elected chairpersons of the other districts and Upazilas will take over the chair of district and upazila committees once election to the district and upazila councils are held. The DCs and UNOs will then serve as members to the committees.

A maximum of two more members may be co-opted locally to an existing WatSan committee from amongst private or public agencies.

Structure and Functions of the WatSan Committees

District WatSan Committees

a.

Chairman, District Council/Deputy Commissioner	:	Chairperson
Civil Surgeon		Member
District Pr. Education Officer		Member
District Education Officer		Member

District Women Affairs officer	Member
District Information Officer	Member
Deputy Director, Social Welfare,	Member
Deputy Director, BRDB	Member
Deputy Director, Family Planning	Member
Deputy Director, Islamic Foundation	Member
Executive Engineer, LGED	Member
Asstt. Director, LGD	Member
Chairpersons of Upazila WatSan Committees	Member
UNICEF Project Coordinator	Member
E.E., DPHE	Member Secretary
Co-opted members : Maximum two nos.	

Structure of the District WatSan Committee in the CHT districts will be as

b.

under:

Chairman of the Hill District Council	Chairperson
Deputy Commissioner	member
HDC member responsible for DPHE	member
Civil Surgeon	Member
District Pr. Education Officer	Member
District Education Officer	Member
District Women Affairs officer	Member
District Information Officer	Member
Deputy Director, Social Welfare,	Member
Deputy Director, BRDB	Member
Deputy Director, Family Planning	Member
Deputy Director, Islamic Foundation	Member
Executive Engineer, LGED	Member
Asstt. Director, LGD	Member
Concerned project official of the CHTDB	Member
Chairpersons of Upazila WatSan Committees	Member
UNICEF Project Coordinator	Member
E.E., DPHE	Member Secretary

Co-opted members : Maximum two nos.

Functions of the District WatSan Committees

- Review progress of WatSan project activities, identify constraints and suggest solutions.
- Ensure interdepartmental co-ordination for promotion of water and sanitation.
- Review and follow up activities of Upazila WatSan committees.
- Prepare activity reports on the progress of the project and send to Project Management and concerned higher authorities on quarterly basis and as and when required .

The District WatSan Committee will meet quarterly and as and when required

Upazila WatSan Committee

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Upazila Parishad Chairman/ Upazila Nirbahi Officer	:	Chairperson
Upazila Health /FP Officer	:	Member

Upazila Education officer	:	Member
Upazila Secondary Education Officer	:	Member
Upazila Social Development Officer	:	Member
Upazila Rural Development Officer	:	Member
Upazila Women Affairs Officer	:	Member
Upazila Statistics Officer	:	Member
Upazila Engineer, LGED	:	Member
Chair persons of the Union Parishads	:	Member
Sub Assistant Engineer (SAE), DPHE	:	Member Secretary
Co-opted members : Maximum two nos.		

Upazila WatSan Committees in the CHT Districts

Upazila Parishad Chairman / Upazila Nirbahi Officer	:	Chairperson
Upazila Health /FP Officer	:	Member
Upazila Education officer	:	Member
Upazila Secondary Education Officer	:	Member
Upazila Social Development Officer	:	Member
Upazila Rural Development Officer	:	Member
Upazila Women Affairs Officer	:	Member
Upazila Statistics Officer	:	Member
Upazila Engineer, LGED	:	Member
Chair persons of the Union Parishads	:	Member
Concerned project official of the CHTDB	:	Member
Sub Assistant Engineer(SAE), DPHE	:	Member Secretary

Co-opted members : Maximum two nos.

Functions of Upazila WatSan Committees

The main functions of the Upazila WatSan Committees will be to:

- Review functioning of the Union WatSan Committees and suggest required improvements.
- Prepare local action plans for National campaigns including on Social Mobilization for Awareness Building and Arsenic Communication campaigns and assign specific tasks for upazila level partner agencies.
- Review and approve work plans and other planned activities of Union WatSan Committees and by any agency appointed by the implementing agency
- Collate information on coverage of water and sanitation in the Upazila.
- Identify successes and constraints in project implementation and recommend ways to overcome difficulties.
- Identify further works required for improved hygiene practices, increased safe water supply and sanitation in the Upazila.

The Upazila WatSan Committees will meet regularly once in every two months.

Meeting may also be called at any other time if needed.

Union WatSan Committees

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Union Parishad Chair person:

Chairperson

UP members, including the three female members (12)	Member
Tube well mechanic, DPHE	Member
Assistant Health/Family Welfare Inspector	Member
Head Master/mistress of primary and secondary Schools (2)	Member
Local Religious Leader (1)	Member
Secretary of the UP	Member Secretary
Co-opted members : Maximum two nos. Union WatSan Committee in the CHT Districts	

Union Parishad Chair person:	Chairperson
UP members, including the three female members (12)	Member
Tube well mechanic, DPHE	Member
Assistant Health/Family Welfare Inspector	Member
Head Master/Mistress of primary and secondary Schools (2)	Member
Local Religious Leader (1)	Member
Para Worker(1)	Member
Secretary of the UP	Member Secretary
Co-opted members : Maximum two nos.	

Functions of Union WatSan Committees

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Major functions of Union WatSan Committees will be to:

- Actively participate in awareness building campaigns in the Union for improved hygiene, sanitation and safe water supply.
- Co-ordinate and review activities of the Union Parishad, Ward Social development Committees, NGOs and other local partners in the fields of hygiene promotion, sanitation and safe water supply.
- Have representation in Upazila WatSan Committees
- Send reports to Upazila WatSan committees and at other levels
- Ensure participation of the community, women in particular in planning, implementation and management of water and sanitation facilities
- Review union based WatSan related Action Plans of communities and appointed agencies
- Ensure that the supports provided to various target groups from the government conform to respective eligibility criteria.
- Process and Forward various applications received from public and user groups to the Sub-Assistant Engineers of DPHE at the Upazila.
- Check and approve sites of new water points jointly with Sub-Asst. Engineer of DPHE
- Assist in the holding of various trainings including Caretakers training.

The Union WatSan Committees will regularly meet once a month. If required, meetings can be held at any other times.

Tenure of the WatSan Committees

Ex-officio members and chairpersons of WatSan Committees will remain in their posts until they are transferred by their authorities or replaced by new ones through elections.

§ Reporting Functions of the WatSan Committees

Annual income-expenditure statement of the UP, submitted under clause 48 of the Local Government (Union Parishad) Ordinance to the DC shall also contain statement on WatSan activities. A copy of the same shall be sent to the upazila and district WatSan Committee while one shall be put on the notice board of the Union Council as usual.)

Member Secretary of Union WatSan Committee (UP Secretary) will send Quarterly Progress Report and Minutes of Union WatSan Committee meetings to Upazila DPHE office and Upazila WatSan Committee.

Member Secretary of Upazila WatSan Committee (Sub-Asst. Engineer, DPHE) will send quarterly progress reports on project activities and Minutes of bi-monthly meetings of Upazila WatSan Committee to the district WatSan Committee regularly.

Member Secretary of District WatSan Committees (E.E, DPHE) will send quarterly reports and minutes of quarterly WatSan Committee meetings to respective Superintendent Engineer DPHE circles and PD.

This Circular hereby replaces the two previous Circulars (No. Pass/1/M/94/0884 of 16.12.1994 or 12/9/1401 Bangla and No. Pass1/1 M-1/94/66 of 29/1/1996 or 16/10/1402 Bangla) regarding Formation of Union Water Supply and Sanitation (WatSan) Committees , issued by the Pass –1 Section of LGD.

Signature:

Secretary, Local Government Division

Ward Social Development Committee(SDC)

In a Circular (No. PJE/ -3/Misc-6/98) issued on 5.11.98 the Local Government Division of the Ministry of LGRD&C asked the Union Parishads to set up three Ward SDCs at the three female headed wards of the union. The three female UP members would chair the three Ward Social development Committees. The government agencies were asked to utilize the services of the SDCs which, according to the ToR, were to :

1. To assist concerned government agencies in implementation of various Health and Family Planning activities, build awareness among the local people and motivate them to maintain hygiene and build planned families
2. To motivate people towards using sanitary latrines and drinking safe water
3. To identify and preserve ponds as safe water source
4. To collect data on births and deaths and send those to the union council
5. To cooperate with government programmes on primary education, mass literacy and adult education
6. To motivate local people to send their children to school
7. To promote setting up and expansion of small and cottage industries in the village
8. To motivate people in forming cooperative societies, setting poultry farms, undertaking tree plantation drives for the economic development of the area
9. To Motivate people to build social resistance against oppression of women and children
10. To mediate in local conflict resolution
11. To assist the law enforcing authorities and

12. To perform other responsibilities as asked for by the government.

The Circular further states:

"The concerned ministry/department/agency which utilizes their support or engages them will provide necessary fund or other support to the committee. The SDCs are entitled to receiving funds or voluntary support from local sources as well.

If the SDC takes part in any activity of the Union Parishad, the UP will provide fund earmarked for the purpose or from its general budget"

However, not a single SDC was reported to be in place with any in the 10 project districts , nor has it been heard that such a committee exists any where else in Bangladesh. Clearly no move was taken to establish these committees.

(The first set of three ward SDCs was set up in one union of Brahman Baria Sadar Upazila in 2002 under the GoB-UNICEF project. The ward SDC members carried out a base line survey on the 8 villages of the union in one month).