A REPORT ON THE

DEMONSTRATION CUM DESSIMINATION OF THE FEASIBILITY OF KAF (KANCHAN ARSENIC FILTER) IN ASSAM

Venue: WHH office, Pancheel Park, New Delhi **Date: July 26, 2011**

Objective of the Workshop: Possible replication and acceptability of KAF as a viable, low cost appropriate arsenic mitigation measure in the arsenic contaminated regions of the country.

The workshop was attended by technical experts and officials from WaterAid, ECHO, Catholic Relief Services (CRS), DanChurchAid (DCA), Welthungerhilfe, Development Alternative (DA), Department of Drinking Water & Sanitation, Indo-Global Social Service Society (IGSSS), AFPRO, Caritas India, representative from German Embassy, Megh Pyne Abhiyan etc

Session 1:

In the opening session, Dr. Joseph Sebastian, Executive Director, IGSSS, New Delhi welcomed the invitees and introduced the background of the workshop.

Joachim Regional Director, Welthungerhilfe South Asia Office introduced the resource persons/technical experts Mr. Bipin Dangol, Environment Engineer of ENPHO, Nepal and also AB Paul, an expert on Arsenic and former Chief Executive Engineer, Govt of Assam.

First Presentation: **Pilot project of IGSSS-WHH by Mangneo Lhungdim, IGSSS**

After the self introduction of the participants, Mr Mangneo Lhungdim, Head-DRR, IGSSS, gave a brief presentation of IGSSS intervention in the addressing the issues of arsenic in the project area.

While constructing ring wells and tube wells for flood affected villages, few water sources found to be arsenic contaminated which is beyond permissible level. IGSSS closed those sources and looked for technology that can address the issues of arsenic at household level.

With the support of Welthungerhilfe, IGSSS introduced Kanchan arsenic filter technology from Environment and Public Health Organization (ENPHO) from Nepal. As a pilot project it has given some insights, experience and results. A few results are

- 1 each KAF installed after successful demonstration at PHED Dhemaji and Lakhimpur
- The test is done on arsenic and 10 parameters. The 10 parameters are Ph, Fluoride, Residual Chlorine, Phosphorous, Nitrate, Iron, Hardness, Chloride, Ammonia and Turbidity
- 75 Bio-sand Filter made and installed in 59 villages
- 7 KAF constructed and installed in 7 villages
- Arsenic contamination brought down to less than 0.05 gm/l

Also community has accepted the BSF and KAF and because of its USP (unique Selling Points) of cost-effectiveness, user-friendliness, effectiveness, etc, KAF is being advocated by IGSSS to the district and state PHED (govt) and other stakeholders for adoption as a scheme under PHED/ Rajiv Gandhi national Water Mission other rural water schemes.

2nd Presentation: Kanchan™ Arsenic Filter (KAF): Research and Promotion in Nepal by Bipin, ENPHO

Bipin Dangol made this presentation and made a strong case for the success of KAF in Nepal since 2002 experimentation, piloting, field- testing and awareness creations. He explained in details all required information about KAF and also about the technicalities of Arsenic and the possible/available mitigation options.

He also explained the KAF composition, how the KAF works and at the end of his presentation, a live demonstration of the KAF was facilitated. Bipin and IGSSS team demonstrated the KAF and series of questions were answered and explained. He substantiated the KAF technology with various research study conducted institutions such as Massachusetts Institute of Technology and independent researchers.

He also showed various models of KAF and the transfer of technology by adopting by training technicians, awareness among community etc.

Some of the queries raised by participants and agreement during the workshop were:

A. Is KAF technology effective if the arsenic contamination is very high?
- KAF is recommended or effective if the arsenic contamination is up to 500 ppb. Beyond that KAF is effective and it is not recommended.

B. What are the safe arsenic disposal methods that KAF provides to users?
- KAF recommends that the residual of arsenic should be mixed with cow dung which transforms it into volatile form. This is environmentally not harmful.
- Jurgen Tummler from ECHO emphasized that safe disposal of arsenic is one of the most important aspects of any arsenic mitigation technology.

C. What is the duration of changing the iron nails?
- In normal circumstances nails should changed in 3 years.

D. How does a family know the timing of cleaning the filter?
- Family should clean the filter if the water flow reduced and it does not meet the water need requirement.

E. Is KAF portable for families during emergency period?
- Plastic models are easy to carry while concrete is difficult. Therefore ENPHO is designing more of plastic models which are easy to carry and cost effective. A plastic models cost roughly Nepalese Rupees 1300.
- In India (Assam) IGSSS has reduced the cost to INR 700.

F. Does air has anything to do with the reducing of arsenic in KAF technology?

- Studies conducted by ENPHO showed that air has no role in reducing the arsenic contamination in the KAF technology.

3rd Presentation: Arsenic Mitigation in Assam by AB Paul

Mr Paul made a very powerful presentation on the history of arsenic contamination, responses and available options in the case of Assam state. He managed to clarify many questions on the technicality of mitigation and also demonstrated through his frank sharing, his passion and commitment in the campaign for arsenic and fluoride mitigation in Assam.

Mr. Paul has worked as Consultant for UNICEF in the case of arsenic testing in Assam and has ever since involved in the issues. He informed the state government response, the areas for improvement and also offers some solutions even he has developed.

Mr. Paul finds the KAF better than most filters and also feels KAF is a good option for some parts of Assam.

After that Mr Bipin demonstrated how KAF filter is constructed, importance of various materials used and how the technology works.

Technical Discussion:

After the presentations the invitees fielded queries, questions and comments on the pilot project of IGSSS-WHH and ENPHOs KAF

Some of the notable comments are:

- Dr. Brajesh SrivastavA, Advisor, Ministry of Drinking Water & Sanitation appreciating the KAF and welcome the organization for upcoming National Workshop on Drinking Water with focus on Arsenic mitigation and here IGSSS-WHH could showcase the technology. This has advantage of cost effective, without electricity and user-friendly.
- ECHO WASH Expert Mr. Jurgen Tummler and many some others pointed out that disposal is a concern as arsenic is an element that stays. He also asserted that source of testing the arsenic is very important. He emphasised that arsenic testing kit should be available for community.
- Mr. Jain, AFPRO – users duty and awareness or motivation and knowledge of maintenance and can be explained.
- Dr. (Mrs) K. Vijaya Laksmhi, DA need for institutional arrangement for sustainability, quality, scaling up either at CBO or Panchayat etc.
- Mr. Srivastav, GOI explained each Gram panchayat has been provided with Testing Kits (This is not certain if this kits are Arsenic or for only 10 parameters)
- Mani Kumar, Regional Officer DRR, DanChurchAid South Asia Office: Use of KAF in flood plains and where communities get displaced often, people's awareness of people on quality of water when in situations access is limited.
- Jurgen, ECHO: Have lab for arsenic testing, emphasis on field testing, colleting samples, we do not know if the actual source of contamination would be deep water, wells, external etc,.

- Convergence of PHED with NRHM legislation and making it mandatory as Govt is responsible.

Response from the Technical Expert:

Bipin – for software and sustainability, ENPHO developed IEC, user manual with picture and drawing. We have made user guides as simple as possible.Date of installation of filter and mark the date to know nail changing times etc.
AB Paul responded to question whether deep well water sources are they arsenic free? He cited the study conducted by IIT/Kharagpur recently comes out with a findings of 118 such deep Tube well in West Bengal were tested from 317 and found 60-70 DTWs were contaminated with As>10/lgm

Conclusion:

The sessions ended with a vote of thanks and summarization by Mr. Joachim Co-Convenor of the workshop.

The organizers expressed sincere gratitude to ENPHO, AB Paul, and all invitees who have shown their concerns on the issues of Arsenic contamination and commitment to ensure safe drinking water to affected household in their areas of work.

Mr Joachim mentioned that KAF is a very good option and there are/will be many other options as well. However, KAF can be effective in areas where contamination is only upto 500 PPB.