Engagement of Water Quality Research group of IITG led by Prof Chandan Mahanta in rural drinking water sector of Assam

For nearly a decade, the water quality research group of Indian Institute of Technology Guwahati (IITG) have played a major role in the rural drinking water sector in Assam. Following a rapid assessment for drinking water quality in 2005, it was decided to have a joint partnership to facilitate the Public Health Engineering Department (PHED) in successful implementation of sustainable drinking water security in rural areas in Assam. The partnership initiated with the Arsenic Screening and Surveillance Program in Assam covering the period 2005-2011. The study was carried out in 76 blocks in Assam pre-identified through a rapid assessment study. Arsenic analysis and database management was performed in a chain of five Rural Laboratories and a State Referral Laboratory set up under the comprehensive Arsenic screening and surveillance program and facilitated by the joint partnership of the UNICEF,IITG and PHED. Necessary technical and managerial support for operationalizing these laboratories were provided by IITG, including required training, capacity building, inventory management, trouble shooting, supervision, quality control and verification and confirmation of accuracy and precision of analysis in AAS. Based on a three tire testing protocol adopted, 29% sources of a total 56,180 sources tested was found to be above WHO limits of 10 ppb and 8% sources above 50 ppb, an estimated population of 7, 22,603 were estimated to be exposed to the risk of arsenic contamination in a 1970 habitations spread across 76 Blocks in 18 Districts out of a total 27 Districts in Assam. 794 sources exhibiting concentrations above permissible limits were found to be located in different schools. The formulation of Water Quality Task Force for Assam was a major outcome of the program and the joint UNICEF, IIT-G, PHED partnership.

With our gradual interventions on the arsenic screening and surveillance program, the greater need for monitoring and assessing the overall water quality aspect was felt and the Water Quality Task Force for Assam was formulated.

Following the arsenic monitoring and surveillance program, the water security Pilot Program in Assam during 2011-12 was initiated in line with the NRDWP guidelines, wherein water security 24x7 in rural areas was the focus. The WSPP was implemented in six selected districts viz. Golaghat, Tinsukia, Jorhat, Dibrugarh, Sibsagar and Kamrup in Assam. Decentralization, community involvement and equity were the key objective of the program. Subsequently, a report on the assessment of Water Supply and Safety Scenario is Assam; a study conducted in

five Districts viz. Cachar, Udalguri, Sonitpur, Jorhat and Kamrup in Assam was developed under the partnership. The study bought to light some of the pertinent issues relating to the drinking water supply and safety scenario in Assam.

Despite setbacks and inherent challenges, the UNICEF-IITG-PHED partnership was successful in achieving some of key milestones during the cycle spanning from 2005-2012, and IITG was instrumental in bringing in these outcomes,

The key outcomes of the IITG-UNICEF_PHED partnership are listed below,

1. Arsenic Monograph

Based on the objectives and outcomes of the Arsenic Screening and Surveillance Program in Assam, IITG provided all necessary technical support for preparation and publication of the Arsenic Monograph. This monograph for the first time displayed the arsenic contamination and distribution scenario in Assam.

2. Lab. strengthening

Through a series of continuous, intensive and focused workshops and training programs, IITG provided support for upgradation and strengthening of the Rural Laboratories, Divisional, Sub divisional and the State Referral Laboratory at Betkuchi, Assam during 2005-2013. The primary objective was capacity building of the people involved in laboratory analyses and management along with ensuring smooth functioning of these laboratories. IITG project team made rregular visits to each of these laboratories for troubleshooting and providing technical advice as regards sample collection, water quality analysis and laboratory functioning. The importance of the need to disseminate the results to communities and corrective measures to be adopted for contaminated sources was also suggested during all such visits.

Fig. Lab analysts conducting water quality measurements in district level laboratories

3. Sectoral Assessment of Water Quality Scenario in Assam

As part of the World Bank sponsored piped water supply schemes for four districts viz. Kamrup, Jorhat, Sonitpur and Hailakandi districts of Assam., IITG project team facilitated in preparing the report on the Sectoral Assessment of drinking water supply and safety scenario in Assam. Field surveys were conducted to verify the status of existing piped water supply schemes and drinking water sources viz. Shallow hand pumps (SHP), Tara pumps (TP) and gauge issues hindering supply of safe drinking water. The report highlighted some of the apparent strength and some of the existing constraints hindering the rural water supply program in the state of Assam and facilitated APHED is getting a comprehensive overview of the drinking water scenario in the state of Assam.

4. Water Security Pilot Program (WSPP)

In line with the NRDWP guidelines, the WSPP in Assam was facilitated by UNICEF Assam, IIT-G, PHED Assam, with the involvement of Gram Panchayats and Jal Surakshaks (village volunteers). This 15-month programme covered 12 blocks (2 blocks per district) in 6 districts, covering 154 gram panchayats and 200,000 households keeping women and community at the core of the implementation process. It was designed to ensure community mobilization in order to ensure 24 x 7 water supply and equitable distribution. The programme ensured strengthening water quality surveillance by setting up institutional mechanisms for the same. The activities undertaken included: Laboratory Upgradation and Capacity Building, Sanitation survey, Community mobilization by NGOs, Preparing village action plans (with community participation), etc. Outcomes: As of December 2011, 980 out of the target of 1,331 Village Action Plans (VAPs) covering 154 GPs were completed. Six district level laboratories were upgraded with state-of-the-art equipment and made functional. Thirty laboratory personnel were trained on water quality testing.

5. Laboratory Benchmarking

Benchmarking of rural and district level laboratories upgraded under the UNICEF-IITG-PHED partnership during 2011-13, along with a few selected laboratories that were to be upgraded was conducted in 2013. IITG team provided necessary field support including questionnaire preparation, orientation workshops, surveys, lab visit for inspection and report preparation. The report highlighted the gaps and bottlenecks hindering smooth functioning of some of the water

quality laboratories was prepared and published. Strategies that ensured smooth and effective laboratory functioning were integrated into the report.

6. Laboratory Protocol

A laboratory protocol based on the life cycle approach. ie. sample collection, analysis/findings dissemination of results to the communities and suggestion of corrective action was published and circulated to all APHED owned district and sub divisional laboratories in Assam.

Fig. Water Quality laboratory protocol for district and state level laboratories in Assam

7. Pre-Monsoon Preparedness Campaigns

To facilitate monsoon preparedness for safe handling and management of drinking water sources, IITG project team facilitated and supported the pre- monsoon preparedness campaigns across the state, particularly in tea garden areas, in partnership with PHED Assam and UNICEF. IITG team provided support in development of Information Education and Communication (IEC) materials along with planning and ensuring successful implementation of the campaigns.

Fig. Onsite measurements of drinking water samples conducted during the Pre Monsoon Preparedness campaigns