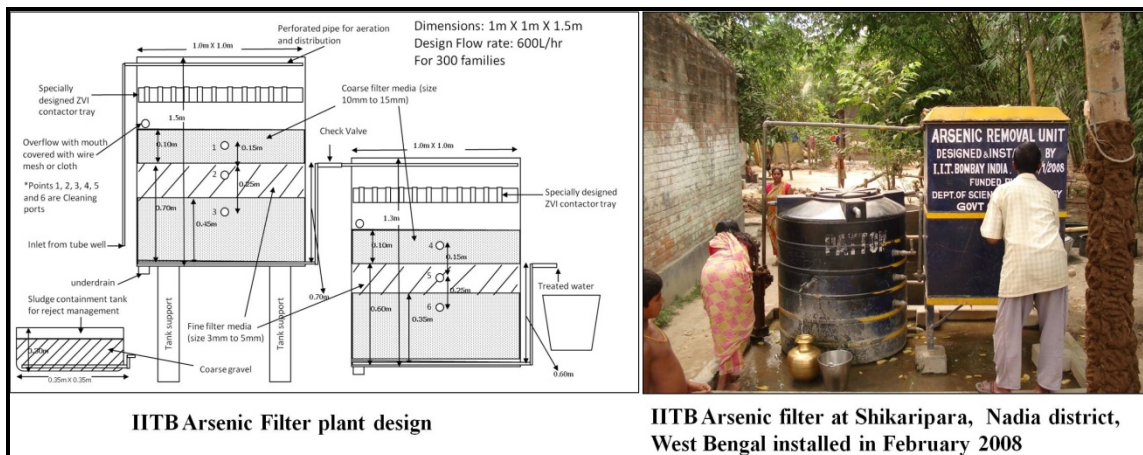


Development of Continuous Mode Arsenic Removal Technology for Drinking Water Based on Indigenous Zerovalent Iron

The IIT Bombay Arsenic removal filter developed under the DST project involves the co-oxidation of Fe^{2+} and $As(III)$ in the presence of dissolved oxygen and subsequent arsenic removal by hydrous ferric oxide, which is formed from oxidation of Fe^{2+} naturally present in groundwater and from leaching of iron nails, thus $As(III)$ oxidation is achieved without addition of any chemicals. This filter can be fabricated by local plumbers and masons in field using locally available materials. The unit is cost-effective and robust, does not require extensive monitoring. This filter provides drinking water to meet the daily needs of 200-300 families and able to achieve arsenic level of $< 10 \mu g/L$ (WHO guideline) for initial arsenic concentrations of up to $500 \mu g/L$ at a flow rate of 600-1000 L/h. The cost for producing 1000 L of water varies from Rs. 0.1 to 1.0/- and the contribution required per family for sustaining the filter is around Rs. 10/- per month. Around 50 units are installed in several villages of Assam, Bihar, Uttar Pradesh, and West Bengal states and are operational for more than three years. The IITB Arsenic filter plant diagram and one of the filters installed at arsenic contaminated villages are shown in the below figure. These plants are providing safe drinking water for 100-200 families at each installation site. The community feedback is quite positive about the filter and most of the villagers observe health benefit within a period of one month. Overall, use of IITB Arsenic filter gives relief to the people suffering from the arsenic contamination in their drinking water.



IITB Arsenic Filter plant design

IITB Arsenic filter at Shikaripara, Nadia district, West Bengal installed in February 2008