

# HYBRID AND NOVEL PROCESSES FOR DECONTAMINATION OF POTABLE WATER

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*Integrated water management is going to be a global issue of this century. With increased human activity and industrialization, surface water quality is registering an upward trend in microbial loading and toxic metal contamination while ground water is getting contaminated with more and more iron, fluoride, arsenic, salinity, etc. As a result, the drinking water scenario is worsening very fast. Arsenic in drinking water has been detected at concentration greater than 0.01 mg/l (Maximum Containment Level) in as many as 11 countries of the world and adverse health effects had been found in Bangladesh, Taiwan (known as Black Foot Disease), India and USA.*

*A low-pressure ceramic membrane based process combining adsorption under fluidized condition and cross flow filtration techniques was developed for removal of arsenic and iron from highly contaminated ground water (up to 1.5 ppm As and 15 ppm Fe) for production of quality drinking water (comparable to packaged/bottled water). So far, 28 nos. community model plants for arsenic and iron removal plants (2500-5000 LPD) have been installed under semi urban and rural areas in India. The performance data in terms of input and output water quality, flux, effect of presence of other constituents for both iron removal as well as simultaneous removal of arsenic and iron will be presented.*

*Case studies showed that the level of purification that can be achieved is <0.01 ppm for arsenic and <0.3 ppm for iron in drinking water with the turbidity level below 0.2 NTU. Compared to the packed bed adsorbent media based technologies, sludge generation in the novel technique is much less due to higher adsorption capacity of the nano-colloidal media. The technology is sustainable and can be adopted for employment generation for O&M of the plant.*

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