

An affordable technology for small rural communities for removing arsenic from groundwater for drinking

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Hundreds of millions of people worldwide are exposed to unsafe levels of the inorganic form of arsenic in groundwater used for drinking. Chronic exposure to arsenic leads to various internal cancers, cardiovascular diseases, and reduced IQ in children. Low-income communities bear a disproportionate burden of arsenic poisoning due to lacking technical, managerial, and financial resources for accessing alternative safe drinking water sources. Iron electrocoagulation (FeEC) emerges as a promising solution for purifying arsenic-contaminated groundwater in such resource-constrained communities. This method utilizes locally available materials, low-voltage electricity, a minimal supply chain, and low operating costs. In this presentation, I will delve into our experiences with technology innovation, implementation, and social integration of FeEC technologies aimed at mitigating arsenic poisoning in resource-poor communities in rural West Bengal and rural California. Furthermore, I will explore the potential of FeEC systems as a single treatment step to address co-occurring arsenic and pesticides in challenging groundwater matrices. I will present removal pathways of these contaminants at various pHs (4.0 to 8.5) using bulk solution, XRD and XAS measurements.