A Novel Arsenic Filtration System for Low-Income Families in Rural Bangladesh

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Globally, over 200 million people are affected by arsenic contaminated water. Moreover, groundwater from tube wells has often been found to be contaminated with arsenic, which if ingested, may result in illnesses such as diarrhea, blood vessel diseases, and types of cancer like skin cancer and bladder cancer. Arsenic filtration processes, like the SONO filter, 3-Kolshi, and ion exchange methods are promising developments that significantly reduce arsenic levels to healthy levels, but factors such as cost, maintenance, and availability prevent many low-income families to use these filtration systems. Hence, the aim of this project was to engineer a novel filtration system that significantly reduces arsenic, easy to maintain, cheap and affordable, and may provide safer water to poverty-stricken populations. In this project, laterite soil was used as a substitute for iron to decrease costs and to take out arsenic from contaminated tube well water. Also, the novel filtration system was streamlined into a one-step process. Through data analysis, the One Step Red Soil Filtration (OSRSF) was found to be superior to a locally made filter. Thus, the OSRSF is an economic option for the poor people to have safer water to drink.

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