

DEVELOPMENT OF A WATER PURIFICATION SYSTEM FOR RURAL COMMUNITY SUSTAINABILITY

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Small, rural communities typically don't have adequate water purification systems to sustain their life quality. The residents get easily exposed to diseases related to contaminants and pathogens present in drinking water. An experimental drum filtration and chlorination system has been installed in a rural community where gravity and solar power are the only options to run the system. Filtration consists of 3 drums packed with 3 different sized sand and backwashing. Chlorination is done with either prechlorination or postchlorination, or both. Engineering operating parameters such as flow rates, backwashing frequency, and operation mode (i.e., parallel or series), and biochemical characteristics such as turbidity, total and free residual chlorine concentrations, and indicator microorganisms have been tested. In the end, these systems will be deployed to those communities which need reliable but low-cost water purification systems for sustainable water supply and quality protecting their health and safety from water-borne diseases.