

# **DEVELOPMENT OF EFFECTIVE HOUSE HOLD WATER FILTER USING LOW COST MATERIALS**

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## ABSTRACT

Countries like Sri Lanka face tough challenges in terms of providing safe, clean drinking water for their citizens. The World Health Organization estimates that thousands of people in Sri Lanka lack access to safe drinking water while globally, most people lack access to improved water supplies. Point-of-use water treatment technologies, such as household water filters, offer an affordable and effective means of treating water to standards suitable for drinking. The fact that water filters can be manufactured and produced by local producers with local materials makes these filters, particularly attractive as a point-of-use treatment technology that is affordable, appropriate, and sustainable. This thesis examines existing water filter technologies, production processes, and methods for bringing a low-cost ceramic water filter to market in Sri Lanka. Several types of filters and types of candle filters are evaluated in terms of microbiological removal efficiency and flow rate. In addition to filtering testing, a guideline for developing a low cost water filter in preparation for bringing a product to market is presented, along with a discussion on the importance of laboratory and field testing to ensure overall product performance. A step-by-step summary of the production process is also presented along with a comparison of the theoretical flow rate through a composite column and prototype low cost filter. Recommendations for future work include testing and modifying the current prototype design and research on the most appropriate filter element for the proposed prototype.