

**Project Title:** *Development of a Point of Use Water Filter for the Developing World*

**Summary**

‘Point of Use’ water purification is an established method of improving water quality and reducing diarrhoeal disease in the developing world. Several technologies are currently being implemented worldwide with varying levels of success.

This report set out to compare these technologies and select one for further investigation. Biosand filtration was selected as it was found to be cost effective, sustainable and popular with users in the developing World. The technology was studied further in an effort to develop the technology. Experiments were carried out studying the effect of adding denim and activated carbon to the traditional biosand filter design. Filter efficacy was analysed through measuring the rate of removal of particles between 2 and 15 microns in diameter.

The addition of denim and activated carbon (AC) improved the removal rates of particulate matter in the 5-15 micron range in all altered filter configurations. However, a large fall in flow rate was observed in the denim pre and post filter configurations, making the addition of an AC mid-layer the most promising adaptation to the biosand filter design.

It was concluded that the AC mid-layer would offer an improvement to BSF filter performance in the early months of field use. The author believes that it is over this early period, before schmutzdecke\* ripening, that the addition of an adsorptive layer is most beneficial.

The experimental results give scope for further research to be carried out into incorporating a removable or temporary AC mid-layer into BSF designs. However the market conditions of AC, namely its cost and supply chain, currently provide an obstacle to large scale implementation of the adapted BSF configuration recommended in this report.

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\* A biologically active layer which forms on the top surface of the sand filter bed.