

## Evaluation of Solar-Driven Water Purification System

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Accessibility to drinking water is a problematic issue everywhere in the world. Many people in Sri Lanka are suffering mysterious and deadly form of kidney diseases because of poor drinking water quality. There are several water purification methods available in Sri Lanka; however, they may not be affordable by those who are economically poor. The objective of this experiment was to design and evaluate a four sided slope passive solar still. Such solar still was developed with bottom basin made up of black glass and roof made up of plane glass. Bottom basin was covered with saw dust of low thermal conductivity. A trough was set at the bottom of roof to regulate the outflow. The height of impure water was considered as 2cm. For the height of impure water there were four treatments such as brackish water (control), charcoal only, mirror only, charcoal and mirror (T1, T2, T3 and T4, respectively). Each experiment was carried out for 3 days. Results of this experiment revealed that highest temperature of internal water and condensed water were achieved in T4. The highest volume of 1.58 L/day was achieved in the capacity of 0.005 m<sup>3</sup>. The water quality parameters such as dissolved oxygen, pH, electrical conductivity, total dissolved solid, total nitrogen, nitrate nitrogen, sulphate, phosphate, chloride, hardness and chemical oxygen demand of inflow and outflow water were determined. Results of this experiment revealed that quality of water after each treatment was within the range of drinking water quality according to the SLS standard 614:2013.

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