Effectiveness of Biofiltration in Removing *Giardia* Cysts in the Developing World

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Access to clean water is a basic human right and a requirement for life on this planet. 780 million people lack fresh water and 2.5 billion suffer from improper sanitation, making this a global crisis. In the US alone 7% of all foodborne illness and deaths are caused by contaminated water. 2,000,000 of those cases were caused by *Giardia lamblia*. This problem is only exacerbated in the global community with a 30% infection rate in the developing world. Historically, biofiltration has been proven to effectively eliminate enteric disease-causing protozoans such as *Giardia lamblia* and non-commensal bacterium. Through observation and application during NGO efforts in Peru, introducing point of use (POU) filtration into rural environments was demonstrated to be an effective method of providing clean water sources. In addition to field application a literature review was conducted to understand the effectiveness of alternative biofiltration methods. By comparing two modalities of POU filtration it is proposed that a holistic approach in implementing water filtration be used to provide rural communities longevity for sufficient potable water sources. The aim of this project is to support sustainable frameworks in reducing the global public health crisis associated with access to clean water by reducing exposure to contaminated drinking water. Empowering communities through education and incorporating proven technologies at the grass roots level clean water can be accessed by everyone.