Turbid or Not Turbid? That Is the Question: Creating a Water Filtration and Sanitation Method for Developing Countries

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Clean and safe drinking water is essential for human life, but unfortunately, many people around the world don’t have access to it. The slow sand filter is one method many people in developing countries use to obtain safer drinking water. The purpose of this project was to determine if the addition of mediums to the slow sand filter would significantly reduce turbidity and bacteria count. This project also studied if the addition of ultra-violet sanitation after filtration would result in significant bacteria reduction. Phase one studied the addition of activated carbon from coconut, corn husk, and activated carbon from orange peels to the slow sand filter. After filtration, the turbidity level (NTU) was observed. In phase two one sample from each filter was sanitized with UV light and one was left with filtration as the only treatment. The water was then grown in a petri dish, and the number of bacterial colonies was observed. In phase, one pea gravel and sand layers of the filter remained constant, and one filter tested had no additional medium. In phase two, the same amount of water was tested per petri dish, and for each test, one petri dish had unsanitized water and one petri dish contained only agar. The hypotheses were that the activated carbon from coconut would have the lowest turbidity level and bacteria count. These hypotheses were supported by the data collected. After all three tests, the activated carbon from coconut had the lowest turbidity level and the least bacteria growth.

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