UVClean or SODISgusting: Comparing the Effectiveness and Efficiency of an Ultra-Violet C (UVC) Sanitizer Box and the Solar Water Disinfection (SODIS) Method

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Clean water is a necessity and essential for human life, but unfortunately in some places, it is not easily accessible. Currently, the SODIS method of disinfection is used in many places, but this method takes six hours at a minimum. The purpose of this project was to develop an ultra-violet C (UVC) light sanitizer box and test if it was more effective and efficient than the solar water disinfection (SODIS) method. This project also compared how effective the two methods of sanitation were on different turbidites of water. It looked at turbid, middle, and clear water from different sources within each method of sanitation (independent variables). After the water was sanitized, it was grown in a petri dish, and the number of bacterial colonies was observed (dependent variables). The same amount of water was tested per petri dish (constant) and for each test, one petri dish had unsanitized water and one petri dish contained only agar (controls). The hypotheses were that the UV sanitizer would be more effective and efficient when compared to the SODIS method. These hypotheses were supported by the data collected. After all four tests, the UV sanitized water had less bacterial growth when compared to the SODIS sanitized water with the same turbidity. The UVC sanitizer only took 30 minutes and the SODIS method took six hours making the UVC sanitizer more efficient as well.

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