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*Irradiation: Using Reflectivity to Improve UV*

The purpose of this project was to improve the efficiency of ultraviolet light used in water treatment by eliminating more *E. coli* colonies from the water using reflectivity. Reflectivity is lining the inside of the water chamber with aluminum foil to reflect UV light rays in every direction. The experiment included a total of 4 water containers. There was 1000ml of river water that had been inoculated with .3 ml of influent in each water container. Two of the four containers were the control(s): one without UV exposure or aluminum foil and the second with aluminum foil on the inside and without UV exposure. The other two containers were exposed to a 254 nm UV light, but one was lined with aluminum foil on the inside and the other did not have aluminum foil at all. After UV exposure for two of the water containers, an enzyme substrate test was conducted for each container to test for the most probable number of *E. coli* colonies in a 100 ml sample of each water container. A turbidity test was conducted to determine the turbidity of the river. In each trial, UV light overall eliminated a large number of *E. coli* colonies from the water, but the container with the aluminum foil along the inside eliminated more *E. coli* colonies than the container without any aluminum foil. In each trial this observation was proven to be true. In conclusion, the efficiency of ultraviolet light in water treatment can be improved using reflectivity.