Washing Away Vital Elements of Our Environment: A Bio-Assay Investigation with Daphnia, Comparing the Effect of Water Quality and Stream Pollution using "Green Detergent" vs. "Conventional Detergent"

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Do High Efficiency Detergents really save the Environment? We conducted a Bioassay experiment to study the effects of environmental changes on Daphnia being exposed to various concentrations of High Efficiency Detergents vs. Non High Efficiency Detergents. We used 30 bottles, giving each of us 15 bottles with the same amount of rocks, river water, daphnia, duckweed, and elodea in them. Each week a detergent was injected at different dosage amounts into the bottles, using High Efficiency detergent in 15 bottles and regular detergent in the other 15 bottles. The data collected supported our hypothesis: High efficiency detergents are better for the environment. Using our Data, we created several “dose-response” curves. The Lethal Dose for 50% of the Daphnia using the HE detergent was 1.3 ml vs. the Non HE detergent at 3ml. By week 3 almost all the daphnia were dead in the non HE detergent bottles. Regular detergent also killed the elodea plants and duckweed plants a lot faster than the HE bottles. This experiment is significant because it proves that HE products are a better choice for our environment. Not only does it save on water, energy, electricity, it also helps in using less resources. These impacts on the environment cost millions of dollars in mitigation programs monitored by the Colorado Department of Health and Environment, like regulation 85. Using High Efficiency and other green products is one way we can help keep our environment healthy and save money in waste water treatment costs.

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