The Implementation of a Novel Phosphate Device for the Mitigation of Harmful Algal Blooms

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As climate patterns change and more pollutants enter the environment, many devastating natural disasters wreak havoc on communities and the ecosystems around them. One such disaster is harmful algal blooms whose occurrence in eutrophic environments cause great health concerns and ecological damage. This multi-year project has approached this problem by finding ways to absorb excess phosphate, the main cause of harmful algal blooms. In this project, a device was designed to contain used Hot Hands, a phosphate absorbing material. The device called a “float” consisted of CPVC pipes with 7/64 inch holes. The hollow inside contained 2.5g of PAMs enclosed by coffee filter paper. 12 aqueous solutions of fertilizer were made to test the floats. Half of the solutions were to undergo two rounds of PAMs and the other half only one. After a week of testing, the project rendered promising results. The jars decreased the phosphates concentration by 16% causing a 7% reduction in biomass of cyanobacteria. Considering that only 2.5g of PAMs were used to treat a quart of water these results are promising. Visual pictures provide a better comprehension of the results as the treated solution have less matting at the bottom. Overall the project lays down guidelines for future projects where the absorption rates can improve. With improvements to the float, it can be employed in aquatic ecosystems to mitigate harmful algal blooms and lead to other designs that will help advance the methods used to combat blooms.

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