Using Montmorillonite Clay to Remediate Algal Blooms

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Harmful algal blooms at a local lake have been persistently concerning in the summer due to the use of fertilizers, among other sources of pollution. The algae grow into harmful algal blooms from the excess nitrogen and phosphorus, which can lead to eutrophication and low levels of dissolved oxygen. A method to mitigate the harmful algal blooms is the clay dispersal method. The clay molecules remove pollutants by adsorbing or absorbing them and then flocculate to larger molecules that become heavy enough to sink and eventually die. The study aimed to evaluate the effectiveness of montmorillonite for the clay dispersal treatment to mitigate harmful algal blooms. Two trials included spring water with sub-cultured algae and water collected from a local lake. Both trials added excess nutrients to the water containers, causing the algae to bloom, and then the treatment was performed. The hypothesis tested: if the containers with the algal bloom(s) are treated by the montmorillonite clay dispersal method, the algal density and turbidity will decrease. The data collected showed that the clay dispersal method decreased the algal density and turbidity. The Chlorella absorbance for the container treated decreased from 0.580 to 0.198, and the turbidity from 118 NTU to 14 NTU several days after the treatment. This indicates that the clay treatment mitigated the algal bloom.

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