How Do Different Concentrations of Glyphosate Affect Phytoplankton Populations and How Effective Will a Granular Activated Carbon (GAC) Absorption Filtration Test Be at Removing Glyphosate From an Herbicide to Protect Phytoplankton Populations?

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This research study served to understand whether the chemical glyphosate, found in commercial herbicides, is a threat to the keystone species phytoplankton, and thus whether it is a threat to ecological communities. Previous literature suggests that phytoplankton is at a severe risk to chemicals like glyphosate; however, they also suggest that the species will be able to recover at a rate that makes the population decline insignificant. This study also served to find out whether glyphosate can be removed from water via a Granular Activated Carbon Adsorption test. This test was used on differing concentrations to see its removal efficiency. Its effectiveness, depending on the results, can suggest whether it should be used to attempt to stop glyphosates' damaging effects. Phytoplankton' s population was measured under a microscope before and after the addition of glyphosate, and this data was then compared using a percentage change formula. Data average was then subtracted by 15.8 percent, the corrected difference, because control showed that phytoplankton deaths occurred outside glyphosate, probably due to external factors like stress, pressure, and poor health. Data from the Granular Activated Carbon Adsorption Filtration test was found via a UV/Vis Spectrophotometer where the absorbency rates of the glyphosate indicated its removal efficiency and whether it can be used to help phytoplankton populations. Results showed that glyphosate was toxic towards phytoplankton, upwards of 70 percent population decline, showing that the chemical has the potential to have severe, long-lasting ecological effects. This experiment will indicate possible ecological damage due to herbicide usage.

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