The Determination of Biologically Facilitated Atrazine Removal in Lentic Microcosms

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Atrazine is an herbicide that is widely used in industrial agriculture to target broadleaf weeds. It is known to have detrimental effects on nontarget communities. Runoff that contains atrazine may cause harm to nearby aquatic ecosystems. This study tested the potential efficacy of biologically facilitated atrazine removal from an aqueous solution. Removal from solutions of atrazine in pond water were tested with and without the presence of an aquatic plant, Lemna minor. A solution of atrazine in distilled water was used as a control. Following a controlled dilution process using volumetric pipettes, initial atrazine measurements were taken using High Performance Liquid Chromatography. After a period of two weeks, final measurements were taken. Statistical analysis included a two-way ANOVA. In this study, “removal” is defined as the concentration difference observed after a period of 14 days. Statistically significant removal was not observed at concentrations of 0.5 and 1 mg/L atrazine; however, samples containing Lemna minor exhibited a greater mean loss than the control samples, and trends in the data suggest a mode of biological removal.