

**Project Title:** Nutrient Removal from Stormwater, Wastewater, and Agricultural Runoff Using Scrap Iron

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**Abstract:**

Nutrient removal from water sources is becoming increasingly important, as nutrient pollution is emerging as a challenging and critical environmental issue. Nutrient pollution (excess nitrogen and phosphorus) can cause algal blooms, human health issues, and ecological and economic losses. Stormwater runoff can aggravate this issue, because it easily carries pollutants from surfaces into storm sewer systems and is discharged, untreated, to water sources. This work focuses on removal of phosphorus using scrap iron, or, zero valent iron (ZVI). ZVI has numerous applications in removal technologies, and in this case, can be used as an amendment into a bio retention system to treat stormwater. By using several flow-through column studies, we were able to assess the removal efficiency of phosphorus by ZVI, by using the advection-dispersion-reaction equation to confirm our observational data. It was determined that ZVI can remove approximately 100% of influent phosphorus at the lowest concentration of phosphorus used. This has great promise as an amendment into the field for the treatment of excess phosphorus in stormwater.