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## RESEARCH EVALUATING THE EFFECTIVENESS OF SULFUR REMOVAL IN WASTEWATER USING THE SSF-CW SYSTEM

### Abstract

The constructed wetland systems are a potential method for addressing sulfur removal in wastewater after anaerobic septic tank treatment in Vietnam. This paper presents research results on sulfur removal and sulfur transformation in horizontal subsurface flow constructed wetlands (35 cm depth) under laboratory conditions with artificial wastewater. The *Phragmites australis* showed a color effect on sulfur removal rate. The Sulfur concentrations in the range of 1.5-2.0 mg l<sup>-1</sup> were successfully loaded and completely removed in the system; sulfur concentrations > 2.0 mg l<sup>-1</sup> caused instability in sulfur removal and depth. The sulfur removal rate reached 282 mg sulfur m<sup>-2</sup> d<sup>-1</sup> with a hydraulic retention time of 1 day. The influence of sulfate on sulfur removal is also discussed. These results suggest that sulfur oxidation and sulfate deodorization can occur simultaneously in the rhizosphere of plant-based water treatment systems treated under dynamic redox gradient conditions (aerobic-anaerobic).

### Keywords:

CW, TOC, Sulfur, treatment, *Phragmites australis*