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Permeable Reactive Barrier Using Atomizing Slag Material for Waste Contaminant Management

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ABSTRACT

The remediation for contaminated soil and groundwater in contaminated site and waste site has to be compact and economic in maintaining and operating the system. In this study, the atomized slag was tested if they are an effective reactive material in permeable reactive barrier. This novel reactive system technology was applied to the treatment of leachate from unplanned waste landfill. The system was optimized and developed to be commercialized.

KEY WORDS

Atomizing slag, Reaction, Permeable reactive barrier, Treatment, Contamination

INTRODUCTION

In this study, atomized slag was tested for remediation of contaminated site and waste landfill. The reactive system using atomized slag was operated to remediate the contaminated site.

METHODS

The pilot able to treat 300m^3/day was built and operated in the field for 11 months. In order to meet the groundwater standard, reactive barrier made of slag material was synthesized and used to polish the effluent from the Ecofloc and the Ecomedia process. The system was automatically operated and its performance was tried to be predicted by numerical model.

RESULTS AND DISCUSSION

1. Atomized slag consisting of CaO (39%) and Fe_2O_3(30%) is shown to have hardiness twice that of sand. Throughout the test (11 months), even though the influent quality was fluctuated, the removal rate of COD, SS, T-P, color, and T-N were 72.5%, 96.4%, 98.7%, 92.3%, and 42.5%, respectively.