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JWARP > Vol.3 No.5, May 2011

OPEN ACCESS

Performance of Reactive Powder Concrete Containing Arsenic

PDF (Size: 60KB) PP. 335-340 DOI: 10.4236/jwarp.2011.35042

Author(s)

Sreedevi Ande, Bruce Berdanier, Venkataswamy Ramakrishnan

ABSTRACT

A mixture of arsenic contaminated soil and reactive powder concrete (RPC) was developed to study the effect of arsenic contaminated soil on RPC mortar and the effectiveness of the mortar in containing the contaminant. The sufficient containment of arsenic contaminated waste products is important to protection of ground and surface water sources. A three phase experiment was designed to study the permeability, absorption coefficients, and Toxicity Characteristic Leaching Procedure (TCLP) leachate concentrations resulting from the application of a range of arsenic concentrations. The results showed that the permeability values for mixes containing different arsenic concentrations did not increase noticeably with adequate curing time. The percentage of absorption slightly increased with increasing arsenic content as did the TCLP leachate concentrations. Statistical analyses, Analysis of Variance (ANOVA) and Paired T-test, were performed to analyze percent absorption, and TCLP results. Based on the results it was concluded that percent absorption decreased significantly with increase in curing time. Although, the TCLP concentrations increased with increased curing time, the increase was not statistically significant.

KEYWORDS

Arsenic, Concrete, Curing, Leaching, Tests

Cite this paper

S. Ande, B. Berdanier and V. Ramakrishnan, "Performance of Reactive Powder Concrete Containing Arsenic," *Journal of Water Resource and Protection*, Vol. 3 No. 5, 2011, pp. 335-340. doi: 10.4236/jwarp.2011.35042.

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