

A Novel Treatment for Acid Mine Drainage Utilizing Reclaimed Limestone Residuals

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Mining activities that lead to the exposure of iron pyrite and sulfite minerals associated with coal deposits to air and water result in the problem of acid mine drainage (AMD). In the U.S. AMD and other toxins from abandoned mines have polluted 180,000 acres of reservoirs and lakes, and 12,000 miles of streams and rivers. It has been estimated that cleaning up these polluted waterways will cost US taxpayers between \$32 billion and \$72 billion.

This study aims to look at the utilization of Reclaimed Limestone Residuals that will henceforth be referred to as RLR as passive treatment methods (i.e. geo-chemical filter in anaerobic wetlands and anoxic drains for acid mine drainage). The Acid Neutralization Potential of RLR was determined to be approximately 83% as calcium carbonate (CaCO_3). Batch tests which included equilibrium tests, competition tests, desorption-oxidation tests, equilibrium tests with pH, oxidation reduction potential (ORP) and dissolved oxygen (DO) measurements were conducted. Other batch tests conducted were dissolution tests, and kinetic tests. Column tests were also conducted to establish how effective RLR was in removing AMD under various flow conditions.

Publications

1. Ochola, C. and Moo-Young, H. (2004). "Reclaimed Limestone Residuals for Acid Mined Drainage." Submitted to Environmental Science and Technology.