

Water Quality at the Roberts-Dawson Coal Mine Three Years After Placement of Flue Gas Desulfurization By-Product

P. Taerakul, M. Lamminen, H.W. Walker, and E. Whitlatch

Department of Civil and Environmental Engineering and Geodetic Science, The Ohio State University 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210

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ABSTRACT

The removal of sulfur oxides following the combustion of coal results in the production of over 20 million metric tons of flue gas desulfurization (FGD) by-product every year. Because coal-fired power plants are typically located close to coal mines, there is increasing interest in the placement of FGD in deep mine environments for the purpose of FGD disposal and acid mine drainage reduction. In this research, we examine water quality at an underground coal mine following the injection of flue gas desulfurization (FGD) by-product. Between September 30, 1997, and January 17, 1998, approximately 23,000 cubic yards of FGD grout was injected into the down-dip portions of the Roberts-Dawson mine. Immediately following grouting, increases in acidity, iron, aluminum, calcium, and sulfur in mine drainage waters were observed at the main seeps exiting the mine. Three years after placement of FGD, however, concentrations of these and other constituents have approached levels observed prior to FGD injection. These results suggest that placement of FGD in deep mines does not have deleterious, long-term impacts on water quality, but further research is needed to develop effective approaches for using FGD to improve the quality of mine drainage waters.