

# Acid Mine Drainage Abatement Using Flue Gas Desulfurization Byproduct: Water Quality Aspects

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Acid Mine Drainage (AMD), is a serious problem in states where coal mining is part of the local economy. AMD forms when water in abandoned mine voids reacts with oxygen and iron pyrite producing sulfates as well as acid. This results in a significant decrease in pH of receiving waters as well as an increased capacity for mobilizing metals. In this study, the potential of using flue gas desulfurization (FGD) byproduct to remediate environmental problems posed by acid mine drainage was investigated. The primary goals of this project were to utilize an FGD grout to (1) seal mine openings and decrease the flow of AMD leaving mine voids, and (2) to improve the water quality of AMD entering receiving waters. To investigate the potential for using FGD in this dual-purpose role, American Electric Power (AEP) in conjunction with Ohio State University injected and sealed the Roberts-Dawson mine site near Coshocton, Ohio with 23,000 cubic yards of FGD grout. Since grouting was completed, a decrease in flow from the mine voids, along with a decrease in the net flux of acidic components and metals, to receiving waters has been observed. No increase in pH has been observed, however, which indicates the quality of AMD has not improved to any significant extent. These results suggest that FGD may be a viable option for reducing the flow and the net flux of acid at abandoned mine sites, however, additional water quality monitoring is required to more fully elucidate the effectiveness of this approach.