

May 5, 2009

132 Bentley Hall

11:10-12:00



Biochemical Processes in the Treatment of Acid Mine Drainage

For the past century acid mine drainage from abandoned coal mines remained one of the leading causes for impairment of streams in Appalachia. Many rural communities grew used to streams filled with orange iron sludge and low pH that rendered the water bodies devoid of fish. Some of these watersheds remain profoundly affected, even in Athens County a short drive from Ohio University. In the past few decades, regulatory agencies and citizen watershed groups have worked hard to return many of these streams to the Clean Water Act criteria of fishable and swimmable using a variety of innovative treatment technologies. In this research, the chemical and biological processes used to remove contaminants from acid mine drainage was investigated. Systems studied include vertical flow wetlands, pyrolusite manganese removal beds, steel slag leach beds, and chemical oxidation with recovery of sludge for paint pigment. The primary contaminant removal mechanism for these systems were tested by a variety of chemical, microbiological, and genetic analyses, and the implications for the design of these systems in the future was discussed.

