

Early Discoveries and Development of Passive Treatment Systems¹

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Abstract: Passive treatment systems have been promoted as a means of treating mine drainage on abandoned mine sites for decades. This presentation reviews the beginnings, early history (first 20 years) and development of the passive treatment of mine water when it was viewed as a possible way to treat small flows of circumneutral and mildly acidic mine coal mine water. Subsequently, more knowledge and experience along with better designs made it applicable for their use for larger flows and more contaminated mine water including water from metal mines. Since then, the approach has been adapted and used successfully to treat an incredible range of mine water quality and quantities, far beyond what was initially considered by those who pioneered research and application of this treatment science. A brief history will include the five early types of systems and their development: aerobic wetlands, anaerobic wetlands, vertical flow wetlands, anoxic limestone drains, and open limestone channels.

Additional Keywords: Aerobic wetlands, Anaerobic wetlands, Anoxic Limestone Drains, Bioreactors, Limestone, Metal precipitation, Sulfate reduction.

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