

Production of an Iron Oxide Product from Mine Water: 15 Year Report ¹

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Abstract: The precipitation of iron under oxidized conditions at pH 3-8 results in iron oxyhydroxide minerals that can have valuable pigmentary and chemical characteristics. In northern Appalachia there are numerous large flows of Fe-contaminated discharges that when treated passively yield large quantities of iron oxides. Iron oxide is a commodity that is valued as an earth-tone pigment, a raw material for ferrite production, and as a sorbent/reactant in water and soil remediation applications. Hedin Environmental has been producing iron oxide from mine discharges and treatment systems for 15 years. Sales over the period have totaled 4,700 tons (solid) with 92% for pigment and 8% for chemical reactivity applications. Recently HE has been working with various partners to advance chemical reactivity applications. Beneficial uses for phosphate control, contaminated soil remediation, hydrogen sulfide treatment, and selenium control have been demonstrated. The presentation will describe the chemical characteristics of iron solids that form in mine water treatment systems, the applications that have been realized over the last 15 years, and opportunities for the future.

Additional Key Words: iron oxide, resource recovery

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