pH CONTROL IN ACIDIC-METALLIFEROUS MINE WASTE FOR SITE REVEGETATION

by

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Abstract. Sulfidic mine wastes with pH levels to 2 to 5 in association with copper and zinc total levels of several thousand mg/kg preclude plant growth. In the Western U.S. such wastes are encountered at high elevation historical metal mine projects as well as along lowland riparian waterways where overbank flows deposited wastes across the floodplain. Numerous industrial by-products containing carbonates, hydroxides and oxides of calcium and magnesium have been evaluated for use as an amendment to neutralize acidic materials. Maximum precipitation of metals from solution was attained when the treated waste pH was cycled up to 10 and then allowed to regress to less than 8.5 during recarbonation of the amendment oxides and hydroxides. By-products having approximately half their neutralization capacity in the form of carbonates and the remainder present as oxides and hydroxides was most desirable. Although industrial by-products may possess excellent characteristics for neutralization of soil acidity, greenhouse plant growth tests indicate some products inhibit plant growth.

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