Remediation of Heavy Metal Contaminated Paddy Soils Using Zero Valent Iron and Compost.. (S11yang100750-Poster)

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Abstract:

Wastes from the closed metal mine had eroded into paddy field contaminating soils with Cu, Pb, Cd, Al, and Zn. Among metals, Cd draws a public concern due to the Cd taken up by rice, which exceeds the national health safety guideline of 0.2 mg/kg. The 0.1M extractable and total concentrations of Cd were about 5 and 10 mg/kg, respectively. Field and laboratory experiments were conducted to remediate the paddy soils with zero valent iron (ZVI: 3%), lime (L: 3 MT/ha), humus (H: 10%, v/w) and organic compost (C: 2 MT/ha). Chemical and biological parameters such as uptake of Cd, rice growth, Cd fractions, and adsorption/desorption capacities were employed to assess the remedial efficiency by treatments. Rice growth based on height and tiller numbers was improved with the orders of (C+L) > ZVI > H=L > (ZVI+L) > C. ZVI and compost were efficient to control the soluble Cd based on the adsorption and desorption capacities of Cd, and suppressed Cd translocation into rice. ZVI, compost and lime with single or combined treatment were effective in remediation of the metal contaminated paddy soils.

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