

Leaching Characteristics of Heavy Metals from CFBC Bottom Ash to Apply Mine Backfilling Material

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In this study, the leaching characteristics of heavy metals including Cd, Cr, Cu, Ni, Pb, Zn, As and Hg based on eluate pH variation and the leaching tests of USEPA 1313, TCLP (USEPA 1311), SPLP(USEPA 1312), and Korean leaching test for bottom ash, is generated from CFBC boiler in power plant, were investigated to evaluate environmental safety with the reuse of bottom ash for limestone mine backfilling. In addition, it was also investigated that the leaching characteristics of heavy metals from the bottom ash by contact with limestone mine drains.

The concentration of Cd in the bottom ash was exceeded Korean soil quality level (4 mg Cd/kg). In overall, the leaching of heavy metals from the bottom ash increased with decrease of eluate pH. Although Ni and Zn were leached up to approximately 2.2 mg L⁻¹ in the severe acidic eluate, the amount of leached metals by all leaching tests applied in this study met the standard for Korean Waste Control and Drinking Water.

Actually, there is a lack of appropriate regulatory standards for meeting each leaching method to determine the contamination level of heavy metals leached from the bottom ash, therefore it is necessary to establish the leaching standard for each leaching method. Then it should be determined the leaching characteristics of heavy metals according to various conventional or new leaching methods depending on the application cases.

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