

Assessment of Trace Elements Leaching of Coal Combustion Residues from Bokaro Thermal Power Station

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The leaching behaviour of coal combustion residues (CCRs) viz. fly ash, bottom ash and pond ash from Bokaro Thermal Power Station (BTPS), Jharkhand was investigated by open column percolation experiment. The study aims to determine the long-term leaching of trace/heavy elements CCRs from BTPS. The results of potentiometric analysis of leachates reflected that CCRs are slightly acidic to alkaline but overall on the long-term basis these are alkaline in nature. From the long-term leaching study of approximately two years, it has been revealed that of the twenty three elements those were analysed by open column percolation experiments, only Ca, Mg, Na and K were found to be leaching throughout the study period though their concentrations reduced considerably with time. Other elements such as Mn, Fe, Cu, Zn, Pb found to leach at significant concentration levels for sometime but found to be absent on long-term basis. Elements such as As, Cr, Cd, Ni, Al, Co, B etc. were not found in the leachate. Conclusion of this study is that CCRs from BTPS are environmentally benign with respect to leaching of trace elements.

Key words : *CCRs, fly ash, bottom ash, pond ash, BTPS, trace elements and leachates*