

Environmental Risk Assessment for Beneficiary Use of Coal Combustion Residues Using Leaching Environmental Assessment Framework

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Abstract : Coal Combustion (CC) residues are the major by-products from thermal power plants. The disposal of ash on to land creates havoc to environment and humans. The leaching of the constituent elements pollutes ground water. Beneficiary use of coal combustion residues in structural components is being investigated as a part of this study. This application reduces stress on the convention materials in the construction industry. The present study involves determination of leaching parameters of the CC residues. Batch and column studies are performed based on Leaching Environmental Assessment Framework (LEAF) protocol. The column studies are conducted to simulate the real time percolation conditions in the field. The structural and environmental studies are performed to determine the usability of CC residues as bricks. The physical, chemical, geo environmental and mechanical properties of the alternate materials are investigated. Scanning electron microscopy (SEM), X-Ray Diffraction analysis (XRD), X-ray fluorescence (XRF) and Energy Dispersive X-ray Spectroscopy tests were conducted to determine the characteristics of CC residue ash and bricks.

Keywords : coal combustion residues, LEAF, leaching, SEM

Conference Title : ICSW 2017 : International Conference on Solid Waste

Conference Location : Paris, France

Conference Dates : February 23-24, 2017