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USE OF UP-FLOW PERCOLATION TEST TO ASSESS THE ENVIRONMENTAL PROPERTIES OF RAW AND TREATED FLY ASH

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Abstract

Fly ash (FA) is a by-product created from the burning of coal in thermal power plants. FA mainly consists of mineral compounds that make them naturally caustic. Despite this, research has shown that FA may be utilized as an alternative material in civil engineering, hydrotechnics and agronomy. Leaching tests may provide theoretical validation that FA may be used as an alternative sorbent or additive in construction material. In this paper, the results of up-flow percolation tests performed on raw FA as well as lime and cement modified samples (MFA) are presented. This method was chosen as it yields the most reliable assessment of releasing heavy metals under long-term exploitation. The research has focused on the leaching behaviour of Sb, As and Se in raw, lime and cement MFA samples. Raw FA was found to leach Se, As and Sb metal ions, cement modification did not prevent Sb and Se leachates, while lime-modified MFA was found to be the most stable material.

Key words: fly ash, heavy metals, leaching, up-flow percolation

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