

Fly Ash: A Potential Excellent Scrubber for Acidic Wastes in Israel

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Abstract

Bituminous coal combustion in large utility plants is the main source (78% in 2001) of power generation in Israel resulting in annual coal consumption is 12.5 Mtons in four power stations. Coal ash is a byproduct resulting in ~1.5 Mtons per year (90% accounts for fly ash) that should be utilized or disposed off properly in order to avoid environmental problem. At present ~43% of the fly ash is used as cement additive to clinker (10%w in the product) and the rest as construction material for embankments and road basements.

The Israeli fly ash is highly basic when exposed to water, due to the very low sulfur content allowed in coal imports (because of strict environmental regulations in respect to SO_x emissions). Thus, the fly ash is a potential chemical scrubber for acidic wastes. In this study, coal fly ash has been examined as a scrubber for acidic sludge produced from the regeneration process of used motor car oil. The results show that the fly ash can be used as a very efficient scrubber of the sludge. Furthermore the trace elements and the organic components are fixed within the fly ash particles efficiently. Product leaching limits are within the CAL WET leaching test, thus it can serve as a good aggregate in concrete production. Bricks produced using the aggregate as sand substitute, have proved to be hard enough according to the concrete standards and the leaching of the trace elements from the bricks is within the environmental regulations (the CAL WET test). The neutralization and fixation processes will be discussed in detail.

Keywords: fly ash, acidic wastes, chemical scrubber, trace elements