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## Coal ash as an efficient chemical fixation reagent and scrubber for toxic chemical wastes and its incorporation in industrial concrete for civil engineering projects

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The fly ashes produced in Israel are very basic (high CaO content) resulting in its potential utilization as a chemical scrubber for acidic wastes. Also the small ash particles have a large surface area and can serve as an excellent adsorption material for trace elements. The potential of bituminous coal fly ashes to fixate toxic acidic sludges and wastes from the chemical industry has been studied. The wastes studied were from the phosphate industry, from regeneration processes of engine oils and from quarries. It was found that Class F coal fly ash is capable to serve as an excellent chemical scrubber and fixation reagent for acidic wastes containing a variety of trace elements. Furthermore, due to the pozzolanic properties of the fly ash it was observed that the scrubbed product can serve as a partial substitute to cement and aggregates in industrial concrete. The mechanical properties and the leaching rate of toxic elements from the product are within the Israeli and European standards of concrete products.

### Biography

Haim Cohen is an Environmental Chemist and a Professor in the Department of Chemical Sciences from the University of Ariel and in the Chemistry Department of Ben-Gurion University of the Negev. He has published more than 200 papers. His main research is centered on Coal Fly Ash and Surface Reactions of Coal.

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