COAL ASH: A VALUABLE COMMODITY TO SOLVE ENVIRONMENTAL PROBLEMS OF TOXIC ACIDIC WASTES TREATMENT

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Abstract: Coal is the major fossil fuel used for power production in utilities and it will stay as an important source for several decades to come. Most of the ashes produced via compustion in utilities are stored or dumped in ponds and only and it's utilization as a useful commodity worldwide is less than 50%. The main utilization mode of the ashes is as a partial substitute to cement, sand or aggregates in concrete for civil engineering projects.
An appreciable percent of the coalashes produced, contain large amounts of basic elements (mainly aluminosilicate with appreciable lime- CaO content) it can be used for neutralization of acidic wastes. The small ash particles (1-35□) have also a relatively large surface area and contain aluminate ($-AlO_2^-$) and silicate ($-SiO_3^-$) anionic groups at the surface. Thus, it has excellent adsorption properties.
Several studies have shown that the ashes are excellent neutralization and fixation reagents to acidic industrial wastes and trap efficiently toxic trace elements and organic contaminants. Thus, the scrubbed product is defined as a nonhazardous waste according to the improved TCLP 1311 method and the European Compliance test 14257.
Moreover, the scrubbed product can be used as a partial substitute to cement or sand in concrete to be used for industrial projects. Thus, the coal fly ash is a valued commodity with an actual added value that can reduce costs of treatment of toxic industrial wastes and solve storage problems of the ash and the waste upon its incorporation in industrial concrete as a green product.