Influence Of Coal/Petcoke Ratio On The Leaching Properties Of Co-firing By-products

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KEYWORDS: petroleum coke, co-firing, leaching, fly ash, slag

ABSTRACT

Petroleum coke is an economically attractive alternative fuel, since this is a low-cost fuel with a relatively high availability and an increasing production due to a higher oil demand. Despite the fact that co-firing of coal with petroleum coke may provide certain economical and environmental benefits with respect to the coal combustion, it may also involve several environmental implications concerning the management of the resulting by-products. Thus, the changes in composition of the feed fuel of power plants may modify the bulk content, fate and speciation of several of elements, which may result in a significant impact on the leachable yields of solid by-products. This study aims at identifying the changes in the environmental quality of the main co-firing by-products induced by the modification of the composition of the fuel blend, emphasizing on the influence of the petcoke/coal ratio on the bulk content and leachability of fly ash and slag constituents. Thus, petroleum coke was found to supply mainly V, Ni and Mo, as well as to enhance the mobility of other elements such as S and As. However, the addition of this secondary fuel does not significantly modify neither the bulk composition nor the overall leachability of the resulting fly ashes and slags with respect to PCC fly ashes. This suggests that the co-combustion with petcoke may not involve significant limitations on the valorization opportunities of fly ashes and slags.

Submitted for consideration in the 2007 World of Coal Ash Conference, May 7-10, 2007.