Influence Of The Use Of Alternative Fuels On The Leaching Properties Of Fly Ashes

Maria Izquierdo[1], Natàlia Moreno[1], Oriol Font[1], Xavier Querol[1], Diano Antenucci[2], Henk Nugteren[3]

[1]Institute of Earth Sciences "Jaume Almera" (CSIC), C/Lluís Solé i Sabarís s/n, 08028 Barcelona, Spain
[2]Institut Scientifique de Service Public (ISSeP), 200, rue du Chéra 200, BE-4000 Liège, Belgium
[3]Delft University of Technology, Faculty of Applied Sciences, DelftChemTech, Particle Technology Group, Julianalaan 136, 2628 BL Delft, The Netherlands

KEYWORDS: fly ash, leaching, co-combustion, biomass, petroleum coke

ABSTRACT

Co-firing of coal with inexpensive co-matters (such as biomass, coal tailings or petroleum coke) as well as the total replacement are expected to increase worldwide in the forthcoming years, taking into account that it may provide certain economical and environmental benefits with respect to the coal combustion. However, the use of alternative fuels leads to different bulk contents and fate of elements during the combustion. This results in different modes of occurrence of elements with respect to PCC fly ashes which, in turn, may involve modifications in the leaching properties of the resulting fly ashes. This study focuses on the identification of the changes of the environmental quality of fly ash induced by the modification of the coal/co-matter ratio in the fuel blend, emphasizing on those elements of environmental relevance in these co-firing by-products. It was found that the addition of co-matters or the complete replacement of coal by alternative fuels do not drastically modify neither the bulk composition nor the overall leachability of the resulting fly ash. This suggests that the co-combustion may not involve significant limitations on the use of the resulting fly ashes as a starting material for some potential applications or even require different management strategies.
We would like to thank the European Commission - DG Research, Research Fund for Coal and Steel, for supporting this study (RFC-CR-04005). This work was carried out with a financial grant from the Research Fund for Coal and Steel of the European Community.

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