

Data analysis of Israeli fly ash using LeachXS

Nadya Teutsch¹, Alon Moshe¹, Olga Berlin¹, David S. Kosson² and Hans A. van der Sloot³

¹Geological Survey of Israel, Jerusalem, Israel

²Vanderbilt University, Nashville, Tennessee, USA

³Hans van der Sloot Consultancy, Langedijk, The Netherlands

Abstract

The use of coal ash in Israel in general and fly ash (FA) in particular spans various application fields including infrastructure, construction and agriculture depending on its definition as "usable ash" from the perspective of environmental safety. This criterion is application dependent and can be determined by evaluating the environmental impact of the FA use such as the extent of metal leaching under specific application scenarios.

In order to assess the potential environmental impact of the usage of FA in the various applications, much attention is given to characterisation methods of FA. Routine measurements of FA total content (major and trace elements) are conducted for the main coals used in Israel. The biannual monitoring includes also two types of leaching protocols: TCLP (low pH leach) and EN (H₂O leach).

The framework "Leaching Environmental Assessment Framework" (LEAF) includes a collection of four leaching tests applicable to a wide range of materials and uses. Alongside with the testing procedures, LEAF includes the program LeachXS for database management and enabling comparisons of leaching data for different tests or materials.

As the first step in the joint project of "Environmental Assessment of Coal Ash Leaching Properties and Beneficial Use Applications using the Leaching Environmental Assessment Framework (LEAF)" total content (since 2004), TCLP (since 2004) and EN (since 2008) have been implemented in LeachXS.

The second step involved implementing pH dependence data into LeachXS which enables comparison of Israeli FA with worldwide FAs including a wide range of USEPA data.

This presentation will include observations from evaluation of characteristics of Israeli coal fly ash in the context of international information.