



October 2011

### **Procedure for trace elements monitoring in coal ash**

#### **Existing monitoring requirements**

- Analyzing for concentration of trace elements in coal and industrial fly ash and bottom ash and in fly ash leachates using US-EPA method TCLP-1311.
- Testing of composite samples<sup>1</sup> is performed every six months

#### **Proposed monitoring requirements**

- The compliance test of trace elements concentrations to the "useable ash" list will be performed in coal ash leachates in accordance with an Israeli version<sup>2</sup> of elution method EN 12457-2. New leaching test procedures, currently in progress in US-EPA and CEN, will be considered as well.
- Continuation of the research for developing transfer coefficients for leachability from powdered ash to monolith, for the purpose of rationalizing compliance testing for the application of coal ash in infrastructure and paving.
- Determination of expected concentrations of trace elements in coal ash from a new source will be performed, using ash formed by a test burning of the coal and a set of transformation coefficients for trace elements from laboratory ash (obtained from coal burnt in laboratory) to industrial ash (obtained from coal burnt in power station), based on historic statistical data.
- Continuation of monitoring tests on composite samples will enable following the evolution of ash quality with time.
- Testing of periodically collected industrial ash samples that are representative of new sources (i.e., mines) or sources that have undergone a significant change or sources that have not been tested over more than two years. The samples will be composed of a mixture of representative sub-samples from each source that were periodically collected at the time of combustion. The duration of the collection period of the sub-samples will be determined in consultation with the professional-scientific (pollutants) panel.
- For each ash (from a given source), a characterization curve of the elements released to the solution as a function of the pH will be built. The results will be used for checking the compliance of the given ash with the requirements for the defined application, as described in the document "Alternatives for coal ash monitoring procedures and criteria for soil uses"<sup>3</sup>.

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<sup>1</sup> A mixture of fly ash samples collected on a daily basis in each power station.

<sup>2</sup> [Summary of the method, Dr. Yaacov Nathan, The Geological Survey of Israel, December 2009.](#)

<sup>3</sup> [Summary following discussion of the professional-scientific \(pollutants\) team from March 11<sup>th</sup> 2011.](#)



Documents of the professional-scientific team in the 2009 workshop:

- [Discussion Platform](#)
- [Discussion Protocol](#)
- [Link to the background material of the discussion \(Session E3 in the workshop page\)](#)