

Field Leachate Characterization at CCP Management Sites

Kenneth J. Ladwig¹, Bruce R. Hensel², Brian G. Hennings², Dirk Wallschlager³, and Jacqueline London³

¹EPRI, 3412 Hillview Avenue, Palo Alto, CA 94304; ²Natural Resource Technology, Inc., 23713 West Paul Road, Pewaukee, WI 53072; ³Trent University, Environmental and Resource Study Program, 1600 West Bank Road, Peterborough, ON K9J 7B8, Canada

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Laboratory leach tests are commonly used to characterize potential leachate quality at coal combustion product (CCP) management sites. Leach test results are then used to model or estimate possible groundwater impacts from the facility. However, standard laboratory tests do not simulate the many environmental variables that affect leachate production and release, particularly for constituents with multiple oxidation states. EPRI, with support from the Department of Energy, is evaluating leachate quality at more than 25 field sites in the United States, representing a range in CCP types and management methods. Samples are collected from leachate wells, leachate collection system, lysimeters, porewater samplers, seeps, and ponds. The samples are being analyzed for a wide range of major and minor constituents, including speciation of arsenic, selenium, chromium, and, in some cases, mercury.

To date, sampling and analyses have been completed at 14 sites: 11 ash and 3 FGD facilities; 6 ponds, 7 landfills; and 1 minefill; 6 subbituminous coal, 6 bituminous coal, and 2 blended coal site. The dominant major ions were sulfate (100 to 10,000 mg/L), sodium (10 to 3000 mg/L), chloride (10 to 1000 mg/L), and calcium (10 to 800 mg/L) respectively. Minor ions with median concentrations greater than 1 mg/L were boron, strontium, and silicon. Trace constituents with the highest ranges were molybdenum, vanadium, selenium, barium, and arsenic. Speciation of arsenic and selenium was variable. The data are being evaluated with respect to coal type, combustion conditions, and CCP management method.

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