

# **Distribution of Mercury and Other Heavy Metals in Aqueous Solutions Associated with Ash Disposal Ponds at a Kentucky Utility Plant**

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## **ABSTRACT**

Water samples were collected in and around two major ash disposal ponds at a coal-fired power plant in Kentucky. The power plant commonly blends Wyoming subbituminous and Kentucky bituminous coals.

The sample sites included two major ash ponds, a drainage ditch surrounding one pond, an outflow from the other pond, an outfall to a FGD pond, and standing water among piles of FGD sludge. A major stream passes by the plant. As a comparison, the stream was sampled 7.3 kilometers upstream from the plant and 2.2 kilometers downstream.

The pH values of the waters ranged from 7.33 (outfall of the FGD pond) to 9.17 (outflow of one pond). In most cases, mercury concentrations in unfiltered and 0.45 micron filtered aliquots were below the detection limit of 50 ng/L. However, unfiltered samples of the standing water and the outfall of the FGD pond contained 150 and 120 ng/L of total mercury, respectively. The presence of trace concentrations of dissolved mercury in waters associated with the FGD sludges is consistent with the volatile nature of the metal. When compared with the stream waters and other filtered samples from the site, the filtered sample from the outfall of the FGD pond (pH = 7.33) contained somewhat higher concentrations of bromine, chloride, fluoride, nitrate, sulfate, iron, calcium, potassium, sodium, beryllium, cadmium, cobalt, chromium, manganese, and nickel. Nevertheless, the highest arsenic, selenium, and lead concentrations in the study were found in the stream samples and may not be associated with plant operations.