

Characterization and Leachability of Coal Combustion Residues in Florida

Principal Investigator	Lena Q. Ma- <i>Environmental soil chemistry</i> (Professor)
Affiliation	Soil and Water Science Department, UF, Gainesville, FL 32611
Associate Investigator	J.C. Bonzongo- <i>Biogeochemistry & toxicology</i> (Associate Professor)
Affiliation	Environmental Engineering and Sciences, UF, Gainesville, FL 32611
Associate Investigator	Bin Gao- <i>Environmental hydrology</i> (Assistant Professor)
Affiliation	Biological & Agricultural Engineering, UF, Gainesville, FL 32611

ABSTRACT

Solid waste management and recycling are of major environmental concerns in Florida as well as in the nation. This project addresses an important solid waste in Florida, i.e., **coal combustion residues** (CCR) detailed in #2-4 of the current Center's Research Agenda. CCR are the second largest waste streams generated in the US. Over 500 power plants nationwide generate >130 million tons of CCR each year. They are either recycled or disposed in landfills and on-site storage ponds. However, there are some concerns about the potential impacts of trace metals in CCR on the environment and ecosystem. The CCR spill in Kingston promoted USEPA to draft a proposed rule to regulate CCR under RCRA. The objectives of this research are two folds: 1) to collect and characterize CCR produced by major utilities in Florida including basic characterization and total elemental concentrations; and 2) assess the leachability and mobility of Hg and As in CCR when disposed on land or in ash ponds. We will employ EPA methods to assess Hg and As leachability when disposed on land under equilibrium conditions using batch experiments. For Hg and As mobility, we will use column experiments simulating ash slurry stored in ash ponds. Our research should greatly benefit FDEP, the public and utility industries.

OBJECTIVE

Our overall objective is to physically and chemically characterize CCR and assess their metal leachability and mobility. The specific objectives are:

1. Collect and characterize ~40 CCR samples from major utilities in Florida
2. Analyze total and SPLP **metal concentrations** in CCR;
3. Determine **metal leachability** in CCR under dry storage condition in landfills;
4. Assess **metal mobility** in CCR under wet storage condition in ponds