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Program: Environmental Engineering

Ph.D. Candidate

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Previous Education:

B.S. in Chemistry, Rajamangala Institute of Technology, Thailand

M.S. in Environmental Science, Chulalongkorn University, Thailand

Dissertation Title: Mechanisms Controlling the Leaching of Trace Metals from Soil Stabilized with Fly Ash

Research focus:

Coal fly ashes can be effective in stabilizing inorganic and organic clays, providing dramatically improved engineering properties. However, leaching of trace elements is a major concern when using fly ash in soil stabilization. Understanding how trace elements are released from fly ash and soil-fly ash mixtures is

a key step in quantifying the potential risks associated with using fly ash in soil stabilization. The objectives of this study are to evaluate whether leaching of trace elements from soil-fly ash mixture is controlled by dissolution/precipitation reactions, and to determine how the type of soil and fly ash used in a stabilization application affects the leaching mechanism and leaching behavior. The pH-dependent leaching test covering the pH range of 5-12 was conducted on three fly ashes (Dewey, Presque Isle, and Columbia), five types of soil (Lawson, Kamm, Red Wing, Mn Road, and sand), and their mixtures. The experimental data will be used in geochemical modeling study to identify the controlling leaching mechanism. Additional data, including concentration of anions and dissolved organic carbon, mineral phases and chemical composition of soil and fly ash will be taking into account to evaluate effects of pH and type of soil and fly ash on the leaching behavior and leaching mechanism of trace elements from the soil-fly ash mixtures.

Outside Interests:

Madison is not only a home to one of the top universities in the nation; it also has a unique geographic site that located on an isthmus between two lakes. The Mendota Lake in a walking distance from my apartment provides me an opportunity to enjoy water sports that I love. I am a NAUI certified diver since 1997 and I enjoyed both snorkeling and scuba diving while I was in Thailand. Here in Madison, I love to ride a wind, so sailing and windsurfing have became one of my favorite outdoor activities. Every minute on the lake is my pleasant time and I am also looking forward to sailing and windsurfing on the open sea when I return to Thailand.