

## **QUARTERLY PROGRESS REPORT**

June 1 – August 31, 2005

### **PROJECT TITLE:**

**Impacts of wood ash and CCA-treated wood on arsenic concentrations in soils and plants**

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COMPLETION DATE: 11/30/2005

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### **WORK ACCOMPLISHED DURING THIS REPORTING PERIOD;**

- Soil (surface and profile) collected from CCA-treated wood poles (based on their age e.g. 20 vs. 40 years) and initial CCA concentrations (type A or type C) in the Austin Carey Memorial Forest, on January 2005, were air-dried, screened through a 2-mm sieve and digested for analyses;
- Soil Al and Fe were extracted with ammonium oxalate. Graphite furnace atomic absorption spectrophotometry was used to analyze the samples; pH was read on a pH meter and total organic carbon was determined on a total carbon analyzer.
- Concentration and distribution of Al and Fe in the soil profile, as well as the pH and C content play a significant role in the distribution of As, Cu and Cr.
- The concentration of oxalate extractable Al (0.01-0.06%) was several times greater than Fe concentration (0.001-0.05%).
- Aluminum concentration in all sites tended to build up in the first 0.60 m and decrease downward;
- Iron concentration in site A was the highest in the top and decreased with depth. Conversely, at site C the Fe concentration increased in depth;
- Among all the layers evaluated, the argillic horizon on site-C had the highest aluminum and iron content.
- The soil pH of the sites ranged from 4.3 to 4.8 and tended to increase slightly with depth, likely due to the movement of non-basic cations from the surface.
- Organic carbon content decreased with depth.

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### **WORK TO BE ACCOMPLISHED DURING THE NEXT THREE MONTHS;**

- Digest soil samples using a modified EPA Method 3050A for the Hot Block Digestion System and analyze the samples for As, Cr and Cu by graphite furnace atomic absorption spectrophotometry;
- Characterize As, Cr and Cu distribution in the soil profiles;
- Relate soil As, Cr and Cu content with those in plant and wood based on the time that the poles were established and initial CCA concentration;