

# QUARTERLY PROGRESS REPORT

October 14<sup>th</sup>, 2005 – January 13<sup>th</sup>, 2005

**PROJECT TITLE:** The feasibility of removing inorganic arsenic from landfill leachate via sorption to mineral oxide surfaces.

**PRINCIPAL INVESTIGATOR(S):** Dr. Maya Trotz

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**COMPLETION DATE: 5/2/06    PHONE NUMBER: 813-974-3172**

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Work accomplished during this reporting period:

1. Solids characterization is 70% complete. Surface Area (BET Multi point N<sub>2</sub> sorption isotherm with NOVA 2200 Surface Analyzer at 77° Kelvin), Porosity (Mercury Intrusion Porosimetry by Micromeritics), XRD (Philips MRD PW3060/20 X-Ray Diffractometer), SEM with EDS (Hitachi S-800 Scanning electron Microscope) analyses were conducted on Kimiron, Lanxess Bayoxide E33 and Adsorbsia GTO. All characterizations, except XRD, were done using the 0.425-0.5 micron size range. Analyses using other size ranges will be done in the next quarter as well as clarification of EDS results.

2. Batch adsorption experiments have begun. These were conducted with Kimiron and ALCO DD660 with and without leachate for two different arsenic (V) concentrations: 100 ppb and 800 ppb. ALCOA DD660 showed reduced sorption of As(V) in the presence of leachate (from Polk county) between pH 6 and 8 whereas the presence of leachate did not affect Kimiron.

3. Historical leachate concentration records for Marion and Alachua county were also obtained from the solid waste directors. We are in the process of obtaining that information from the other 4 landfills identified in Task 1 as potential users of this treatment process.

**Information Dissemination Activities:** Project information updated on landfillinfo.net. A REU poster was presented at the USF symposium in April 2006. The REU site is: <http://www.eng.usf.edu/~schlaf/REU/Symposium/Symp2006/symposiumS2006.html>

**TAG meetings:** The first TAG meeting was held on 5/2/06 at USF. Attending were Tim Vinson, Hooshang Boostani, Warren Brady, Allan Choate, Debra Reinhart, Audrey Levine, Jeffrey Cunningham and students Douglas Oti and Austin Roe. The meeting lasted approximately 2 and ½ hours and included a presentation by Dr. Trotz, questions and discussion and a lab tour. The group approved changing the proposed sorbents from DD660, GFH, and zero valent iron to Kimiron, Lanxess Bayoxide E33 and Adsorbsia GTO.