

# **MORE Science at UTSA**

## **Environment Science and Engineering**

### **Spring 2007 Seminar Series**

**Where:** room (2.01.02) in the BSE Building

**When:** 4:00 PM – 5:00 PM on February 9, 2007

**Snack and drinks will be served**

**Speakers:** Dr. Rupali Datta, Assistant professor, UTSA  
Mr. Syam Sundar Andar, PhD student, UTSA

**Dr. Datta's Topic: Role of Chelating Agents in Enhancing Lead Uptake by Vetiver Grass (*Vetiveria zizanioides* L.) from Lead-Based Paint Contaminated Residential Soils**

Lead based-paint is the most significant source of lead exposure among children in U.S. Preliminary results from a soil survey of houses with lead-based paint in San Antonio, TX and Baltimore, MD showed that these soils were highly contaminated with lead. Experiments to develop a low-cost and environment-friendly Phytoremediation model for extraction of soil lead is in progress in the EGL. A fast-growing, high biomass grass, vetiver (*Vetiveria zizanioides* L.) is being used along with chelating agents such as EDTA and EDDS to enhance phytoavailable lead in soil solution and plant uptake. This project is funded by the Department of Housing and Urban Development (HUD).

**Mr. Andra's Topic: Involvement of Phytochelatin in Lead Accumulation and Tolerance in Vetiver Grass**

Physiological, biochemical and molecular mechanisms involved in uptake, tolerance and accumulation of lead in plants are also being investigated in the EGL. Results obtained indicate that Vetiver grass can tolerate high concentrations of lead with no toxic physiological effects. Heavy metal tolerance in plants is conferred by Phytochelatin (PCs), a class of post-translational synthetic peptides; which chelate, detoxify, and reduce cellular free metal ion concentrations by forming PC-metal complexes. Experiments were conducted to elucidate if PCs were involved in metal detoxification in vetiver grass using high pressure liquid chromatography-electrospray ionization mass spectrometry (HPLC-ESI-MS). This study provides evidence of the role of phytochelatin in the tolerance of lead by Vetiver grass.