PROJECT TITLE: **Heavy metal sensor for drinking water**

Noe T. Alvarez, Ph. D.  
305 Crosley Tower  
Cincinnati OH 45221  
alvarene@ucmail.uc.edu  
Office 513 556 9370

**Project Description**

Detection of heavy metals in our drinking water has become high priority for our society, particularly for people living in cities where water infrastructure was built more than 50 years ago. This research intents to develop an electrochemical sensor based on CNTs to detect toxic metals such as Pb, Cd and Hg that recently has been contaminating our drinking waters. Current detection techniques are time consuming, expensive and not suitable for households to monitor their drinking water. The sensor will quantify trace levels of multiple heavy metal ions simultaneously and should operate autonomously. Our electrochemical approach employs carbon nanomaterials and anodic stripping voltammetry to detect nanomolar concentrations, however the sensitivity heavily depends on the material characteristics. Besides research on the chemistry of materials, miniaturization of the electrodes allows the fabrication of small sensors that can fitted within water pipes and potentially alert citizens about contamination.