

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Proton-Induced X-Ray Emission Analysis of Crematorium Emissions¹ SALINA ALI, BENJAMIN NADARESKI, JOSHUA YOSKOWITZ, SCOTT LABRAKE, MICHAEL VINEYARD, Union Coll — There has been considerable debate in recent years about possible mercury emissions from crematoria due to amalgam tooth restorations. We have performed a proton-induced X-ray emission (PIXE) analysis of aerosol and soil samples taken near the Vale Cemetery Crematorium in Schenectady, NY, to address this concern. The aerosol samples were collected on the roof of the crematorium using a nine-stage, cascade impactor that separates the particulate matter by aerodynamic diameter and deposits it onto thin Kapton foils. The soil samples were collected at several different distances from the crematorium and compressed into pellets with a hydraulic press. The Kapton foils containing the aerosol samples and the soil pellets were bombarded with 2.2-MeV protons from the 1.1-MV tandem Pelletron accelerator in the Union College Ion-Beam Analysis Laboratory. We measured significant concentrations of sulfur, phosphorus, potassium, calcium, and iron, but essentially no mercury in the aerosol samples. The lower limit of detection for airborne mercury in this experiment was approximately 0.2 ng/m³. The PIXE analysis of the soil samples showed the presence of elements commonly found in soil (Si, K, Ca, Ti, Mn, Fe), but no trace of mercury.

¹Union College Department of Physics and Astronomy

Salina Ali
Union Coll

Date submitted: 24 Jul 2014

Electronic form version 1.4