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Proton-Induced X-Ray Emission Analysis of Crematorium Emissions SALINA ALI, BENJAMIN NADARESKI, ALEXANDREA SAFIQ, JEREMY SMITH, JOSH YOSKOWITZ, SCOTT LABRAKE, MICHAEL VINEYARD, Union College — There has been considerable concern in recent years about possible mercury emissions from crematoria. We have performed a particle-induced X-ray emission (PIXE) analysis of atmospheric aerosol samples collected on the roof of the crematorium at Vale Cemetery in Schenectady, NY, to address this concern. The samples were collected with a nine-stage cascade impactor that separates the particulate matter according to particle size. The aerosol samples were bombarded with 2.2-MeV protons from the Union College 1.1-MV Pelletron Accelerator. The emitted X-rays were detected with a silicon drift detector and the X-ray energy spectra were analyzed using GUPIX software to determine the elemental concentrations. We measured significant concentrations of sulfur, phosphorus, potassium, calcium, and iron, but essentially no mercury. The lower limit of detection for mercury in this experiment was approximately 0.2 ng/m3. We will describe the experimental procedure, discuss the PIXE analysis, and present preliminary results.

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