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PIXE Analysis of Heavy Metals in Soil Along East River[1] MIA E. VILLENEUVE, JACOB E. FEINSTEIN, COLIN M. LANGTON, SCOTT M. LABRAKE, MICHAEL F. VINEYARD, HEATHER C. WATSON, Union College — We have performed a proton-induced X-ray emission (PIXE) analysis of soil samples collected along the East River in Queens, NY, at the Union College Ion Beam Analysis Laboratory (UCIBAL). Previous results for samples collected over a 5-km distance between Astoria Park and Gantry State Park show a spike in the Pb concentration to about 1500 ppm near the Hell Gate Bridge with a rapid decrease to <500 ppm on either side of the bridge. We suspected that this spike is due to Pb-based paint used on the bridge when it was constructed in 1916. To investigate this, we collected samples at smaller distance intervals around the bridge, which were then dried, sifted into a fine powder and mechanically shaken for 24 hours to ensure a uniform mixture. Pellets were created by hydraulically pressing 0.5 grams of soil with a few drops of polyvinyl alcohol, then coated with a thin layer of Al and used as targets for the PIXE measurements. The samples were bombarded with 2.2-MeV proton beams from the Union College 1.1-MV Pelletron accelerator. X-ray spectra were measured with an SDD detector and analyzed with GUPIX software to determine the concentrations of heavy metals in the soil samples. We will discuss the sample collection and the analysis procedure and present the results.

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