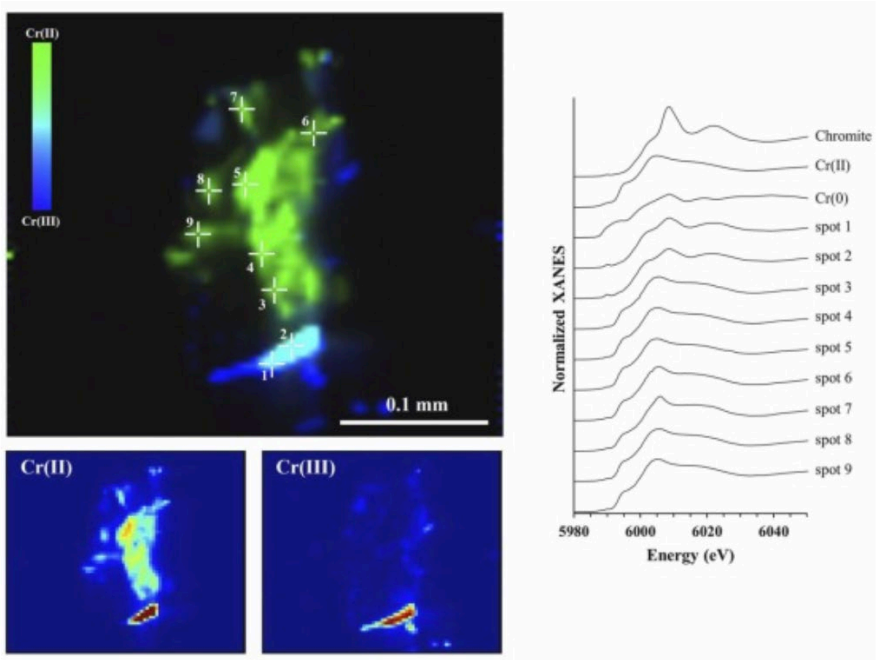
How Water Salinity Affects Contaminants in Coastal Urban Soil

4-BM XFM



Oxidation state maps of a contaminated soil sample. The green and blue colors indicate Cr(II), and chromite [Cr(III)] hotspots, respectively. The crosses represent specific locations where μ-XANES spectra were acquired.

P. Sricharoenvech, M. G. Siebecker, R. Tappero, G. Landrot, M. H. H. Fischel, D. L. Sparks. Journal of Hazard. Mater. ***462:*** *132661 (2024). doi: 10.1016/j.jhazmat.2023.132661*

This work was performed in part at NSLS-II.

Scientific Achievement

Seawater and low oxygen conditions resulted in lower release of the contaminant Chromium (Cr) from soil compared to freshwater and aerobic conditions which significantly increased the release.

Significance and Impact

The toxicity of Cr is dependent on its oxidation state. Learning how environmental factors, like water salinity and oxygen content, change that state could have ecological impact.

Research Details

- Microfocused x-ray techniques were performed at the XFM beamline at NSLS-II along with the Soleil synchrotron to identify different chromium species found in contaminated soil samples.
- With this technique, researchers have hypothesized how changes in water salinity and redox conditions impact Cr stability.

University of Delaware · Texas Tech University · USDA · Soleil Synchrotron · Brookhaven National Laboratory