

Understanding chromium speciation and mobility in urban-industrial environments.

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The historic operation of a chrome works in the Shawfield area of Rutherglen, Glasgow, has resulted in large scale chromium (Cr) contamination in the area. Approximately 2.5 million tons of the waste has been spread around Glasgow resulting in elevated concentrations of toxic hexavalent chromium (Cr(VI)) in surface water near waste disposal sites. As a result, the Polmadie Burn has high concentrations of Cr in its water, sediment and burn-side soil.

Both the mobility and toxicity of Cr depend on its oxidation state therefore understanding the controls on its speciation are key to predicting its impact on human health. Iron oxides and organic matter are known reductants of Cr(VI) and manganese oxide is the only known oxidiser of Cr(III) in the environment

This project has characterised the distribution of Cr in the Polmadie Burn system using a range of analytical techniques and aims to predict how changing environmental conditions affect how Cr behaves in the soils, sediments and water.