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# Molecular-scale changes to cadmium in dredged canal sediments on oxidation; implications for bioavailability

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Although now primarily used for leisure, canals are an important feature of the British landscape. They have considerable historical significance and often form the backbone of urban regeneration schemes. Canals and rivers in urban areas have been particularly prone to industrial pollution, and a legacy of misuse and neglect has resulted in localised contamination of the sediments.

This work seeks to quantify the influence of sulphidic phases on metal release and retention in dredged canal sediments using a combination of traditional chemical techniques and x-ray absorption spectroscopy (XAS). These methods have proved to be powerful tools for the study of trace elements in natural materials (O'Day *et al*., 1998). XAS is being used to focus on direct observation of metal associations in canal sediments by comparing sediments dried in oxygen and under vacuum. The XAS results obtained using XAS will be combined with traditional elemental analysis (sequential extraction) and element mapping using SEM-EDX to investigate the changes in metal association/availability brought about by drying of dredged sediment (as would occur after disposal to land).

**Reference**

**O'Day P.A., Carroll S.A., & Waychunas G.A (1998)** Rock-water interactions controlling zinc, cadmium and lead concentrations in surface waters and sediments, US Tri-State mining district. 1.Molecular identification using X-ray absorption spectroscopy. *Environ. Sci. Tech*, **32** 943-955