Goldschmidt 2000
September 3rd–8th, 2000
Oxford, UK.

Journal of Conference Abstracts
Volume 5(2), 957

Dredged Canal Sediments: Changes in Metal Leaching Behaviour on Drying and Oxidation

Samantha Stephens (s.r.stephens@reading.ac.uk)[1], **Brian Alloway** (b.j.alloway@reading.ac.uk)[1], **Joy Carter** (j.carter@derby .ac.uk)[2] & **Andrew Parker** (a.parker@reading.ac.uk)[1]

[1] P.R.I.S, University of Reading, Whiteknights, Reading, RG6 6AB, UK
[2] SEAS, University of Derby, UK

Canals can act as sinks for a wide range of pollutants including metals. In order to maintain navigational depth and prevent flooding, canal systems are dredged. In the U.K, the dredgings are sometimes deposited on land, where the organic-rich anoxic sediments are exposed to the atmosphere and undergo changes in redox as they dry. Within anoxic sediments metals may exist as sulphides. Oxidation of these sulphides, as the sediments dry and oxidise on land would result in changes in the mobility of the metals present in the sediment. The relationship between the ratio of sulphide/sulphate and water extractable metals as a dredged canal sediment dries under oxic conditions has been investigated. The ratio of sulphide/sulphate decreases and the amount of readily available (water leachable) metal increases over a period of weeks as the sediment dries (see Figure 1). This relationship is a good indication that the metals in the fresh anoxic sediment are associated with a reduced phase such as sulphides and become more mobile as the sediment is oxidised. This has major implications for the management of dredged sediments, since the mobility of sediment bound metals will increase as the dredgings dry and oxidise. Sequential extraction has also been carried out in order to investigate changes in metal associations as the sediment dries.

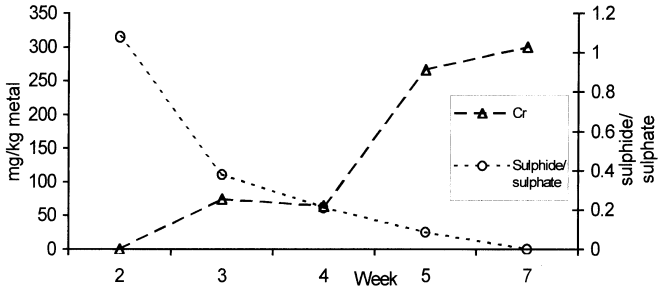

Figure 1: Water extracted Cr and the sulphide/sulphate ratio of a dredged canal sediment over a period of seven weeks of drying.