



Bioavailability and bioaccessibility of Metals in the Environment using ICP-CCT-MS

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An important aspect of environmental risk from chemicals to humans is to determine the amount of chemical that may be mobile or “available” in the soil environment. Approaches have been developed that estimate the mobility of metals in soil based on single extraction¹, sequential extraction² and the physiologically-based extraction test (PBET).³ In the case of PBET it has been specifically used to assess the risk to humans from metals. The approach seeks to mimic the processes of human food digestion and thereby assess the bioavailability of metals from soil consumed either accidentally or intentionally in the diet. *In vitro* conditions are created to simulate various actions in the stomach and intestines. Whereas single and sequential extraction approaches allow the mobility of metals in soil to be assessed in terms of their chemical and physical properties. Using a specific example, this presentation will explore the merits of using each of the approaches to assess metal bioavailability and any associated risk to humans.

1. A.M. Ure, *The Science of the Total Environment*, **178**, 3-10 (1996).
2. Ph. Quevauviller, *Trends in Anal. Chem.*, **17**, 632-641 (1998).
3. M. Intawongse and JR Dean, *Trends in Analytical Chemistry*, **25**, 876-886 (2006).