

## Measuring and modelling chemical bioavailability in soils

**CHAIRS:** David Spurgeon, Erik Smolders, Elma Lahive



Thursday 15<sup>th</sup> May 2014, 08:10 – 12:50, room: Delhi

Soils are recognised as one of the major sinks for contaminants released from diffuse and point sources. Knowledge of chemical fate and effects in soil is, therefore, an important and relevant component of contemporary ecotoxicology. In soils there are a range of chemical and biological processes that will determine the degree to which soil borne contaminants are available to be taken up by organisms. The influences of these processes can, therefore, have a considerable influence on the extent of toxicity for organisms exposed to a similar soil chemical concentration, but under diverse soil conditions. In the last 10 years, considerable progress has been made to identify and quantify the extent to which different soil properties affect the toxicity of metals and organic chemicals. For metals, measurement methods (sequential extraction, in-situ biomimetic measurement) and modelling approaches have provided a very useful set of tools for bioavailability and toxicity assessment. For example, terrestrial biotic ligand models are now available for a range of microbial, plant and invertebrate species for the best studied metals (Cd, Cu, Zn) and these can provide a blue print for the development of new and refined approaches for other species and elements. For organic chemicals measuring and modelling methods have also been shown to be useful. Concepts around the use of chemical structure and chemical properties have provided notable insights, while passive sampling partitioning based techniques and equilibrium sampling devices have proved valuable as means to assess the bioavailability and chemical activity of organic molecules in soil. In this proposed session, we would aim to bring together a set of focus talks that will address the current state of the art concerning the use of measurement and modelling approaches for determining chemical bioavailability in soils. The abstracts that will be sought should be focussed on the use of new measurement and modelling methods (alone and in combination) that can provide a better description of the process that govern bioavailability in soils. Where it is appropriate information relating to the application of bioassays and biomarkers may be included, although these should be complimentary to the aim of bioavailability assessment. Particular attention will be given to those talks able to use such methods to understand not only specific effects relevant to a particular case, but also the wider insights and governing principles.

**SESSION TYPE:** Platform, Poster Spotlight and Poster

**ADVISORY GROUP:** Global Soils Advisory Group