

## **Pollution Control in Wetland Soil and Water Around the Globe**

***Jörg Rinklebe***

University of Wuppertal, Germany

Soil and water around the globe are contaminated with various pollutions including PFAS, PHAHs, plastics, toxic elements such as arsenic, cadmium, mercury, antimony and others. In particular, wetland soils are very vulnerable since they serve as producer of food, including rice. Wetland soils are regularly flooded and thus, they underlie large fluctuations of redox conditions. Those changes of redox conditions have considerable impacts on the biogeochemical behavior of toxic compounds as well as on pH, carbonate, and carbon solubility, chemistry of iron, manganese, and sulfur as well as on microbial community, which control the mobilization of toxic compounds.

Doubtless, the redox potential and pH are master variables in governing those mobilization processes. We conducted experiments in the laboratory to study mechanistically the release dynamics of toxic elements. Also, we identified suitable amendments to stabilize those toxic compounds in wetland soil which should be stable even under dynamic redox conditions. Biochar is considered as one option to fulfill this purpose. Results gained at various scales (laboratory and field scale) will be presented.