**Session Proposal**

# Session Title

Soil Pollution by Heavy Metals and Risk Control

# Session Organizers

**Peng Wang,** Nanjing Agricultural University, China, p.wang3@njau.edu.cn, primary contact person.

**Longhua Wu,** Institute of Soil Science, Chinese Academy of Sciences, lhwu@issas.ac.cn.

**Peter Kopittke,** The University of Queensland, Australia, p.kopittke@uq.edu.au.

**Enzo Lombi,** University of South Australia, Enzo.Lombi@unisa.edu.au.

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# Session Description

This session focuses on the critical issue of soil pollution by heavy metals and their remediation, addressing the scientific and technological effects and mechanisms of this global challenge. Soil pollution, caused by industrial activities, agricultural practices, and urbanization, poses significant risks to ecosystems, food security, and human health. This session will showcase cutting-edge research, innovative and remediation technologies aimed at mitigating contamination and restoring soil health. Topics will include environmental behavior of pollutants, advances in bioremediation, phytoremediation, chemical remediation and other techniques, as well as the integration of circular economy principles and sustainable land management practices. This session will also highlight case studies and success stories from diverse regions, emphasizing interdisciplinary approaches to tackle soil pollution. This session aims to foster collaboration, share knowledge, and promote actionable solutions to ensure the long-term health and productivity of soils worldwide. The relevance of this session lies in its potential to contribute to the United Nations Sustainable Development Goals by addressing one of the most pressing environmental issues of our time.

# Format

Oral presentations and panel discussions. The panel discussion will allow for interactive dialogue between speakers and attendees.

# Proposed Speakers

**Enzo Lombi,** University of South Australia

His research focuses on synchrotron-based techniques to study the molecular interactions of contaminants, providing critical insights into their bioavailability and remediation. Lombi has developed innovative strategies for in situ immobilization of heavy metals, reducing their environmental risks. He also explores the use of nanomaterials for targeted pollutant remediation. His work bridges advanced science with practical applications, contributing to sustainable soil management and informing global policies on soil contamination and remediation.

**Peter Kopittke,** The University of Queensland, Australia

He has made significant contributions to the field of soil pollution remediation, particularly in understanding the behavior and management of toxic substances in soils. His research focuses on how contaminants, such as heavy metals and metalloids, affect soil health and plant growth. He has pioneered studies on the mobility and bioavailability of pollutants in soils, which are crucial for designing effective remediation strategies. Additionally, Professor Kopittke's work emphasizes the development of sustainable practices for the restoration of polluted soils, including the use of soil amendments and phytoremediation techniques. His research is also instrumental in improving our understanding of the interactions between soil properties, contaminants, and plant physiology, thus helping to mitigate the adverse impacts of pollution on agricultural productivity and environmental health. Through his groundbreaking work, he has contributed to advancing both scientific knowledge and practical applications in soil pollution management.