Mineral regulation of organic matter physical conformation at the soil-water interface: a new variable in organic contaminant sorption. (S09-salloum150752-Oral)

Authors:

- M.J.Simpson - *University of Toronto*
- A.J.Simpson - *University of Toronto*
- P.G.Hatcher - *Ohio State University*
- W.L.Kingery - *Mississippi State University*

Abstract:

Nonionic, hydrophobic organic contaminant sorption to soil organic matter (SOM) is of continual concern due to the strong association between the contaminant and organic matter. Many correlations suggest that the quantity of sorption to SOM characteristics and endorse a relationship between sorption and the aromatic carbon content. This presentation will highlight a new aspect of contaminant sorption, SOM physical conformation that is currently under development. This hypothesis stems from a series of investigations that have observed significant differences between sorption behavior and SOM characteristics (determined from H/C and solid-state NMR) that cannot be attributed to SOM chemistry alone. Sorption studies with whole soil samples, humic acid and humin fractions have found that the fractions sorb more contaminant than their associated source material. This suggests that organic matter fractionation exposed more or simply, more favorable sorption sites and that minerals regulate the conformation of organic matter. State of the art NMR experiments have also demonstrated that not all organic matter structures are surface accessible and corroborates the hypothesis generated from the sorption data. These sorption and NMR studies will be presented and discussed in detail.

Corresponding Author Information:

Myrna Simpson
Division of Physical Sciences, University of Toronto
1265 Military Trail
Toronto, Ontario M4C 1Z4
Canada

phone: 416-287-7234
fax: 416-287-7204
e-mail: msimpson@utsc.utoronto.ca

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 8:00 am

Keywords:

Organic contaminant sorption, Organic matter physical conformation, Nuclear Magnetic Resonance Spectroscopy, Soil organic matter