

## ***Interactive comment on “Carbon nanomaterials in clean and contaminated soils: environmental implications and applications” by M. J. Riding et al.***

**Anonymous Referee #1**

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The paper explored implication and application of carbon nanomaterials (CNMs) in clean and contaminated soils. CNMs can interact with hydrophobic organic contaminants (HOCs), and thus have an impact on the persistence, mobility and bioavailability of contaminants within soils. Overall, this review paper is well written, and the whole paper flows smoothly. It is one of the excellent papers I have read on an open-access journal. There are only several minor things that need to be addressed. Specific comments, following the order of the manuscript, are listed below.

1, Authors have discussed many aspect of CNM in soils. One question would be: what will be the realistic concentration of anthropogenic CNM in the soil? If their concen-

C79

tration is extremely small, what will be the critical concentration level that can exhibit toxicity? If there is another scenario that we have to apply CNM to the soil, what is the potential application of CNM to soil?

2, Page 153, likely the section of “Carbon nanomaterial diversity and detection” focuses more on the diversity of CNMs, however, not on detection. If authors can summarize a table about the detection methods of CNMs in soil or other complicated matrix, it will be very helpful for readers who are interested in this topic. I have listed a few papers talking about the detection of CNMs. (1), Detection of carbon nanotubes in environmental matrices using programmed thermal analysis, K Doudrick, P Herckes, P Westerhoff - Environmental science & technology, 2012 (2), Thermogravimetry–Mass Spectrometry for Carbon Nanotube Detection in Complex Mixtures, Desirée L. Plata, Christopher M. Reddy, and Philip M. Gschwend, Environmental science & technology, 2012 (3), Characterization and Quantitative Analysis of Single-Walled Carbon Nanotubes in the Aquatic Environment Using Near-Infrared Fluorescence Spectroscopy, Ariette Schierz, Ashley N. Parks, Kathryn M. Washburn, G. Thomas Chandler, and P. Lee Ferguson, Environmental science & technology, 2012

3, Page 160, line 28, authors have mentioned about “the physicochemical properties of pristine nC60” depends on the “method of synthesis and preparation”. Please clarify how could the synthesis and preparation affect the property of nC60. Additionally, would the preparation method of nC60 affect the toxicity behavior in soils?

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Interactive comment on SOIL Discuss., 1, 151, 2014.