Metal-based nanoparticles in soil: New research themes should not ignore old rules and theories. Comments on the paper by Hu et al. (2010) 'Toxological effects of TiO_2 and ZnO nanoparticles in soil on earthworms *Eisenia fetida*.' Soil Biology & Biochemistry 42, 586-591

Cornelis A. M. Van Gestel[1] & Pauline L. Kool[1]

[1] *VU University Amsterdam*

Abstract

During the last decade, the use and application of nanomaterials has shown an exponential growth, with nanoparticles increasingly being used in an increasing number of products (Aitken et al., 2006). This development also has raised concern on the emission to the environment and consequent potential ecotoxicological effects of these nanomaterials. Recent literature reviews have demonstrated the lack of knowledge in this field, with especially little data being available on effects on soil invertebrates (Handy et al., 2008; Klaine et al., 2008; Kahru and Dubourguier, 2010). These reviews also highlighted the specific properties of nanoparticles and the consequent requirements of proper tools for characterizing and quantifying their exposure concentrations in ecotoxicological tests. Emphasis is placed on determining properties like particle size distribution, surface area and charge density, and the possible need for alternatives for the traditional concentration- based (in mg kg_1) way of expressing exposure levels (Handy et al., 2008; Klaine et al., 2008).

Reference

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For more information you can contact:

Project office: NanoFATE@ceh.ac.uk ; Project Coordinator: Claus Svendsen (csv@ceh.ac.uk)

Nanoparticle (NP) Bioavailability work package leader: Cornelis (Kees) van Gestel (kees.van.gestel@falw.vu.nl)

Project Website: www.nanofate.eu

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