EXPOSURE AND IMPACTS OF NANOMATERIALS AT VARIOUS LIFE CYCLE STAGES

AUFFAN Melanie

CEREGE CNRS Aix Marseille University, Marseille, France, EU

Abstract

Due to their novel properties, nanomaterials cannot be considered as other organic and inorganic xenobiotics in the environment, e.g. pesticides, dissolved metals, hormone-like chemicals. They are subject to phenomena of classical and quantum physics. Their reactivity means that their surface atoms are labile, they can easily change their redox state, and are highly reactive with respect to compounds in the environment. Considering the huge range of applications using nanomaterials, it seems reasonable to expect their dissemination in the environment at each step in their life cycle, from design through production to use and disposal of finished products.

To date, the data available show that nanomaterials can cross biological membranes and distribute themselves within different compartments of living organisms, or can also induce a remote toxicity. Consequently, there is a need to elucidate how the nanomaterials can lead to adverse effects on organisms in their natural environment, considering not only their effects on target organs and life traits, but also their fate and transfers within the food webs.

In this presentation we will discuss the relationships between the potential effects of nanomaterials towards environmental organisms with respect to their physico-chemical properties, the organism functions, and the relationships between species.

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