

Occurrence, identification, fate and behavior of engineered nanoparticles and nanoscale pollutants in marine systems.

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The oceans have been found to be the sink for many classes of persistent environmental contaminants, and it is likely that synthetic nanomaterials will also find its way to the sea, water borne or via sediment transport. In addition to synthetic nanomaterials, many other types of micro- and nanoscale pollutants have recently been identified as potential emerging pollutants, e.g. from road runoff, combustion, mining, waste and industrial processes. These incidentally produced nanomaterials can either be harmful themselves or carry toxic molecules adsorbed. The knowledge of potential exposure of pelagic and benthic marine organisms from nanoscale contaminants in the sea are limited by suitable measurement methods and fate and behaviour studies.

This presentations will review the potential methods for detecting and characterizing nanoparticles in seawater[1,2]. The limited knowledge on occurrence and size distributions of micro- and nanoscale contaminant particles will be discussed in relation to the natural particles. Further will be discussed fundamental behaviour and transport processes affecting synthetic nanoparticles in seawater, e.g. dissolution and complexation, interactions with natural organic matter[3,4], stabilization and agglomeration of natural and synthetic nanomaterials in estuarine mixing[5], sedimentation processes affecting the vertical distribution of particles in the sea.

References:

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