

Nanomaterials-An environmental challenge for bioavailability measures

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Nanotechnology and the use of nanomaterials is a rapidly growing commercial sector in today's global society; however, the method to measure the bioavailability of the byproducts from this industry is not standardized globally. Worldwide industries including agricultural and manufacturing companies are the largest sources for the emission of these nanomaterials. There is considerable concern about the environmental impact of nanomaterials largely because few toxicological studies have been conducted on the acceptable levels of these nanomaterials, specifically in water. The object of this analysis and research is to review the current United States EPA policies as it relates to the acceptable bioavailability quantities for total maximum daily load (TMDL) with specific attention toward the bioavailability of nanomaterials. And to discuss the effect that source pollution has on the world's aquifers and the potential long-term consequences. This research involves the review of scientific journal articles, online resources and current US EPA policies. The author will also address the need for global standard references and testing materials, as well as methodology for preparation and analyzing nanomaterials. This work was completed as part of the Group for Microgravity and Environmental Biology (GMEB) effort and was supported in part by NGA grant #HM1582-06-1-2044 and NSF grant #HRD0624929.

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