Aquatische Ökotoxizität von Nanopartikeln – Versuche zur Aufklärung von Nanopartikeleffekten

Over the last decade the number of products on the market containing engineered nanoparticles (ENPs) has increased significantly and concerns have been raised regarding the potential for ecotoxicological effects of ENPs. To promote safe and sustainable use of ENPs, environmental safety assessments are needed and for this purpose relevant and reliable ecotoxicological data is demanded. While the literature on ecotoxicological effects and uptake of ENPs is rapidly expanding, the applicability of reported data of ENPs for hazard assessment purposes is questionable. A major knowledge gap is whether nanoparticle effects occur when test organisms are exposed to ENPs in aquatic test systems. This knowledge gap is not straightforward to fill, due to the high variability in ENP types, and the different behavior of ENPs compared to "ordinary" (dissolved) chemicals in the ecotoxicity test systems. The risk of generating false negative, as well as false positive, results in the currently used tests is high, but in most cases difficult to assess. This literature review outlines some of the pitfalls in aquatic toxicity testing of ENPs which may lead to misinterpretation of test results. Furthermore, the review proposes response types to account for in order to reveal potential nanoparticle effects in the aquatic test organisms used for risk assessments of ENPs.

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