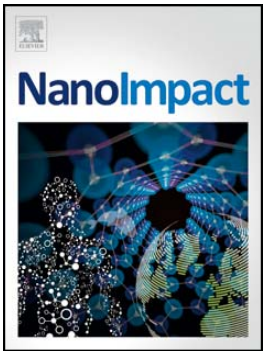

Quality in Nanosafety - Towards a reliable nanomaterial safety assessment

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Quality in Nanosafety

- Towards a reliable nanomaterial safety assessment-

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Nanotechnology combines a series of scientific disciplines that synthesize, manipulate or analyse materials on the nanoscale. It is regarded as a key enabling technology (EC 2011; US NNI 2016) having impact on a variety of different industrial and consumer sectors as it is allowing for faster computers, better energy storage, enhanced consumer products, better and earlier diagnostics and optimized healthcare. Hence, the global investment in nanotechnology in the last decade exceeded $67.5 billion from public funding sources (Scientifica Global Funding Report 2015) and global revenue from nano-enabled products was estimated as $1 trillion in 2013 (NSF 2013). Nanomaterials often show unique physico-chemical properties that distinguish them from conventional non-nanoscale materials but the very same properties that render these materials interesting for numerous applications gave rise to concerns on their safety. Accordingly, in the last 20 years millions of dollars/Euros have been invested in addressing the overarching topic of “nanosafety”. Many projects worldwide created huge amounts of data using various different methods and a variety of different nanomaterials.

Despite this, these large amounts of data reveal more issues than solutions. Although overall plenty of data have been accumulated, data coverage in detail is still poor with data gaps in particular when it comes to chronic effects (i.e. possible carcinogenicity). Where data is available, in particular for the data that has been obtained using *in vitro* models, there are many discrepancies and inconsistencies, also in how the data is reported, leading to a certain degree of confusion and to uncertainties in how to deal with that data when it comes to risk assessment. It seems that obtaining and accessing reliable data on the safety of nanomaterials remains challenging for several reasons including the fact that systematically varied nanomaterials are hardly available and