

Safety Implementation of Nanotechnology for Chemical Enterprises within a Bottom-Up Approach towards Communication

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Abstract

Within the aim of the Central Europe project NANOFORCE the general objective is to connect public and private organizations, to carry out collaborative and interdisciplinary researches on nanomaterials, and to turn the most promising laboratory results into innovative industrial applications.

To build up a legal advisory board for chemical enterprises starting in nanotechnology, a state of the art report on existing safety procedures and nanotech related legislation was produced to illustrate the existing regulatory framework within the European region. Data sets of lab analysis which are performed on three different nanomaterials will lead to safety data sheets showing how the tested nanomaterials can be produced and professionally used conforming to safety and users guidelines. Results can already be shown generated by standardised *in vitro* testing methods for human toxicity and ecotoxicological testing for nanomaterials like nano-silver, zinc oxide and titanium dioxide.

In the outline of presenting a transnational guideline on responsible management for researchers and industry, to have a safe and informative set of regulations to be followed when entering the nanotechnology businesses, another focus was laid on the correct implementation of nano-derived products and market placement, also partly focusing on consumer acceptance to be one of the major problems. Furthermore the guideline will help to distribute information on risks and benefits resulting from the use of nanotechnology as one of the key enabling technologies.

Additionally the regions attractiveness for investors in nanotechnology within the CE area is presented by business plan incorporating information on micro-economic data, infrastructure and funding situation. This is needed to foster the interactions between research and industry and additionally strengthened by a supervised online platform focusing on start-up collaborations between researchers and industry. This "NanoDeals- Generator" platform provides expertise tailored to individual needs and support innovative SMEs in launching new joint nanotechnology initiatives. Until now several experts have been registered and proposed their project ideas and NANOFORCE is providing a match-making facility to boost the communication activities. To evaluate the proposals a technology rating methodology for the assessment, validation and evaluation of "NanoDeals" has been developed following the "three-pillar bridge" presented by the High-Level Expert Group on Key Enabling Technologies, focusing on technology research, product demonstration and competitive manufacturing.

Within this contribution and together with the current state of the art on regulations to be used for nanomaterials, necessities in regulation of nanomaterials will be presented. Preliminary test results in the field of nanosafety will be shown on different used and produced nanomaterials and directly provided by companies. Possible market barriers and including strategies to overcome these barriers are going to be presented within the NANOFORCE transnational guideline in terms of benefits resulting from nanotechnologies. In addition to this the "NanoDeals-Generator" online platform and the proposal of a business plan will be shown to outline the projects output - to fill the gap between more and less experienced regions and to turn investments in R&D into industrial innovations.

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