
Contribution ID: **7** Type: **not specified**

# Assessment of dermal exposure to nano-objects, and their agglomerates and aggregates (NOAA); Results from a pre-normative research project

*Wednesday, March 11, 2015 5:30 PM (30 minutes)*

Occupational dermal exposure to NOAA can be relevant in view of penetration through the skin, local skin effects and inadvertent ingestion. The potential for consequences of dermal exposure to nanomaterials will be determined by both parameters of exposure and other parameters. With respect to penetration and local effects, the integrity of the skin is an important determinant , whereas for ingestion the frequency of hand-mouth will affect the oral intake.
Size is an important factor for penetration of the nanoparticle through the skin. It has been demonstrated that only very small particles (< 4nm) can penetrate the intact skin, whereas larger particles can only penetrate and permeate in damaged skin. Since the condition of the skin is important, the combination of job titles with high incidence of skin disruption and the use of NOAA or nano-enabled products indicates potential risk for enhanced skin penetration or local effects .
Explorative research showed that the most promising method to measure exposure on skin in view seems to be the removal from (surrogate) skin, by tape lifting, and consecutive analysis by SEM.
All results were connected into a framework that will be helpful to flag potential risk due to exposure to NOAA

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**Session Classification:** 6B Occupational and consumer exposure

**Track Classification:** Parallel session 6B: Occupational and consumer exposure