

## Danish EPA report provides in-depth examination of dermal absorption of nanomaterials

*A new report published by the Danish Environmental Protection Agency evaluates existing knowledge on the potential systemic absorption of nanomaterials via dermal exposure.*

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A new report published by the Danish Environmental Protection Agency (EPA) provides a comprehensive evaluation of the knowledge base regarding the dermal absorption of nanomaterials.

The report is the final output of the project “Dermal absorption of Nanomaterials”, which forms part of the “Better Control of Nano” initiative 2012 – 2015 conducted by the Danish EPA with the aim of further clarifying possible risks to consumers and the environment from nanomaterials.

The overall objectives of the project – which was led by the Institute of Occupational Medicine (IOM) working with COWI A/S – were to: i) gather and evaluate the existing knowledge concerning the dermal absorption of nanomaterials, ii) assess the need to generate new knowledge, and iii) develop recommendations for the most suitable skin models, measurement methods and relevant candidate nanomaterials for future experimental testing.

The report, which is supported by a database of appraised scientific literature, includes:

- assessment of the extent of dermal absorption of nanomaterials;
- identification of nano-specific characteristics that may influence dermal absorption of nanomaterials;
- evaluation of which test method(s) would most closely simulate the transport of nanomaterials through the skin; and
- assessment of the specific research areas that require more knowledge.

Report co-author Dr Craig Poland highlights that “despite an abundance of publications in this area, results are often conflicting and confounded by a lack of proper physico-chemical characterisation and/or non-systematic alteration of multiple experimental parameters. On balance, the literature suggests that absorption of nanoparticles through the skin is possible although occurs to a very low degree and that the level of penetration, depending on chemistry and experimental conditions, may be greater than for larger particles.” Dr Steve Hankin, project lead at IOM, emphasises that “a need for more robust, harmonised and systematic testing approaches (and guidelines) is stressed, and it is proposed that future testing should focus on a set of priority candidate physico-chemical properties rather than a single nanomaterial or group of nanomaterials.”

The full report, and accompanying literature database, is available to download from the Danish EPA website. <http://www2.mst.dk/Udgiv/publications/2013/09/978-87-93026-50-6.pdf>

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Notes to Editors

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