

Advanced Materials – How to handle them in Industry?

Jonas Schubert^{1,2}

1 Department of Functional Colloidal Materials, Leibniz-Institute for Polymer Research Dresden e.V., Germany

2 DermaPurge GmbH

Advanced materials are increasingly applied in industry. They provide benefits for costumers, companies and the environment. However, in many cases the long-term effect of frequent usage of advanced materials cannot be foreseen. Consequently, risk management strategies are needed to ensure a safe and long-lasting implementation for these materials.



In this talk two industry branches will be displayed to show, where advanced materials constantly generate human health risks. In these cases regular soap is not suited to clean the skin effectively. Soap is not optimized for specific substances. Its cleaning performance is therefore extremely insufficient; in some cases below 5%. Furthermore, soap opens up the skin pores and thus leads to an increased uptake of the hazardous substances.[1] The talk will, however, present a solution to the problem. To mitigate the health risks, three skin cleaning agents were developed that clean the skin from hazardous substances. The presented solutions are free from so called penetration enhancers and exhibit a cleaning efficiency of more than 96%.

Take home messages:

1. The application of nano-sized powders in 3D printing processes generate health risks as the particles can easily cross the skin barrier
2. The largely increased prevalence of cancer for firefighters is (partly) caused by the polymeric materials they work with.
3. Risk Management is the key factor for a long-lasting implementation and acceptance of advanced materials.

References :

[1] Richard P. Moody*, Brita Nadeau, Ih Chu, In vivo and in vitro dermal absorption of benzo[a]pyrene in rat, guinea pig, human and tissue-cultured skin, Journal of Dermatological Science 9 (1995) 48-58.