COTTON UTILIZATION IN NANO-ENHANCED TEXTILES

Mourad Krifa
Kent State University
Kent, OH

Abstract

The potential of nanotechnology in textile and apparel applications is vast but remains virtually untapped. Major opportunities exist for novel textile products such as life-saving protective clothing, smart environmentally-adaptive textiles that improve the quality of life and safety of consumers, and medical textiles that prevent infection and improve safety. Yet, commercial application of nanotechnology in clothing is unregulated and it is unclear how much of the potential evidenced in research has reached the marketplace. In addition, consumer acceptance of such products may be inhibited by perceptions of potential risks related to nanotechnology use and safety. In this study, we examined the extent to which nanotechnology is used in current textile products based on an analysis of two consumer product databases with inventories of nano-enhanced consumer products. The first is the Nanotechnology Consumer Product Inventory or CPI, which was initiated in 2005 by the Woodraw Wilson International Center for Scholars and the Project on Emerging Nanotechnology (Vance *et al.*, 2015). The second is known as the "Nanodatabase" and was developed by the Danish Ecological Council, the Danish Consumer Council, and the Technical University of Denmark to document European consumer products claimed to incorporate nanotechnology (Foss Hansen *et al.*, 2016). The analysis shows that more than 60% of the inventoried products are in the health and fitness category. While nano-enhanced clothing in general represented a sizeable portion of the health and fitness category (23%), the vast majority appeared made of non-cotton materials. Overall, there remains a wide gap between the potential expressed in research on nanotechnology in textile consumer products and the marketplace reality.

References

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