

PLENARY LECTURE: INTERNATIONAL ASSESSMENT OF RESEARCH NEEDS FOR NANOTECHNOLOGY ENVIRONMENT, HEALTH AND SAFETY

Thursday, 10 April 11:15am-12:15pm

UNM SUB Room: Fiesta

Kulinowski, Kristen (ICON/Rice University)

Abstract: The unique properties and potential mobility of engineered nanoparticles along with the lack of mobile monitors to detect their presence pose significant challenges to the development of best practices for nanomaterial handling throughout the lifecycle.

Extrapolating from health and safety data available for a larger scale material may fail to capture the nanoscale analog's interactions.

Nanoparticles' diversity and tunability make it difficult to predict their behavior. The interaction of an engineered nanoparticle with a cell, for example, can change dramatically with small changes in size, shape or surface properties, such as may occur during the nanoparticle's incorporation into a product or as a result of introduction into the body, even if the chemical composition of the base nanoparticle is constant. Testing each different variant of a nanoparticle, even if limited to those of commercial relevance, is impractical. A better understanding is needed of the structure-activity relationships of nanoparticles themselves, particularly those with potential for high exposure or high-volume application in current and future products, so that we can proceed with greater confidence that the EHS issues have been identified and can be managed. The presentation will review the outcomes of two international workshops that considered the research needed to predict nanoparticle interactions with living systems and the environment.