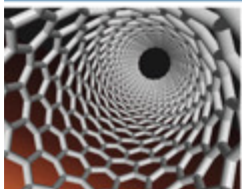


# Gradient



## NEWS ALERT

### Study of Chinese Workers Claims to Raise Red Flag Regarding Nanoparticle Safety

Generating headlines like "Deadly Nano" and "Nanoparticle Safety in Doubt," a new study released in the *European Respiratory Journal* is likely to have far-reaching implications across the nanotech industry. In this study, investigators at China's Capital University of Medical Sciences linked unusual and progressive lung disease in seven Chinese workers, two of whom died, to nanoparticle exposures in a print plant where a polyacrylic ester paste containing nanoparticles was sprayed onto a polystyrene substrate, with subsequent heat-curing.

#### What Can be Learned from the Song *et al.* Study?

While highly tragic and certain to create a stir among regulators, the media, and the general public, it is important to recognize that this study does more to highlight the critical need to follow well-established industrial hygiene practices than to provide direct evidence in humans of any unique health risks posed by engineered nanoparticles. Given the spraying of a chemical paste and the heating of a plastic material in an enclosed space lacking any mechanical ventilation, it is clear that these workers were exposed to a complex cocktail of chemicals and fumes. Based on the identification of nanoparticles in the paste, in accumulated dust in the workplace, and in lung tissues and cells of the workers, it is likely that these workers were exposed to nanoparticles in their workplace. However, given the lack of chemical analysis of the nanoparticles and the workers' co-exposure to a variety of other toxic substances, it remains highly uncertain to what extent workplace nanoparticle exposures, compared to other workplace exposures, may have contributed to the observed health effects.

Regardless of the actual role of nanoparticles in the observed health effects, there are important lessons that can be learned from this study. In particular, given the limited knowledge regarding the health and safety risks posed by engineered nanoparticles, it is imperative that best management practices for workplace exposures be followed to control and minimize potential exposures. Fortunately, a number of good resources are available for identifying state-of-the-art nano practices, including the ICON GoodNanoGuide. This study also highlights the critical need for robust exposure assessments to support health effects studies, providing data to characterize key nanoparticle properties and to differentiate engineered nanoparticles from incidental nanoparticles.

#### Gradient Can Help You Address Nanomaterial Exposure and Risk Concerns

Whether you would like to understand the strengths and limitations of the Song *et al.* study or of other emerging nanotoxicology studies, or are interested in designing a monitoring program to evaluate potential nanoparticle exposures, Gradient has the expertise to help you. Gradient has vast experience in assessing exposures and potential health risks for a wide variety of small particles and fibers. Gradient's Nanotechnology Service Area draws upon our expertise in toxicology, human health risk assessment, product safety, contaminant fate and transport, and ecological risk assessment to address human and ecological health concerns and regulatory issues associated with engineered nanomaterials.

For more information on Gradient's Nanotechnology Services, contact:

[Barbara D. Beck, Ph.D., DABT, FATS,](mailto:bbeck@gradientcorp.com)

**Principal**

[bbeck@gradientcorp.com](mailto:bbeck@gradientcorp.com)

[Christopher M. Long, Sc.D.,](mailto:clong@gradientcorp.com)

**Principal Scientist**

[clong@gradientcorp.com](mailto:clong@gradientcorp.com)

[Mara Seeley, Ph.D.,](mailto:mseeley@gradientcorp.com)

**Senior Toxicologist**

[mseeley@gradientcorp.com](mailto:mseeley@gradientcorp.com)

Gradient is a nationally renowned consulting company offering expertise in toxicology, risk assessment, product safety, environmental chemistry, and fate and transport. We have significant experience in evaluating exposures and risks associated with small particles and fibers, and in communicating scientific analyses to the public and regulators.



With growing public and regulator concerns regarding the safety of engineered nanomaterials, now is the time to proactively address these issues.

For more information, please contact us.

**Gradient**  
**20 University Road**  
**Cambridge, MA 02138**  
**Phone: 617-395-5000**  
[www.gradientcorp.com](http://www.gradientcorp.com)