

## Novel toxicity related to nanomaterials? Silica nanoparticles cause pleural effusion and pericardial effusion in workers and in rats

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Nanomaterials introduce novel risk factors and potentially lead to novel hazards within the workplace or through environmental contamination. Here, we introduce our study in the nanoexposed workers and animal experiments. Further information on the novel toxicity related to the silica nanoparticles was collected and the potential mechanisms were discussed. With the rapid development of nanotechnology and the extensive use of nanoproducts, the potential hazards of nanomaterials to the environment and human health were widely concerned. Nanomaterials introduce novel risk factors and potentially lead to novel hazards within the workplace or through environmental contamination. *In vitro* and *in vivo* studies show that the toxicities nanomaterials posed include damage to lungs, heart, liver, kidney and nerve, as well as reproductive and immune systems and they also have carcinogenicity. Additionally, some studies reported the specific toxicity of nanomaterials which appears due to their unique physicochemical properties. However, it is still controversy in regarding to the nano-specific toxicity, and some scientists regard that there is no evidence of novel 'nano-specific hazard' comparing to micro -materials. We previously reported that

a group of patients exposed to nanomaterials presented with an unusual disease with pleural and pericardial effusion, pulmonary fibrosis and granuloma. And our further rodent study shows that silica nanoparticles that were isolated in patients can also cause pleural effusion and pericardial effusion- a rare and unusual symptom- which may be the novel toxicity related to nanomaterials. Here, we introduce our study in the nanoexposed workers and animal experiment, further information on the novel toxicity related to the silica nanoparticles was collected and the potential mechanisms will be discussed.

### Speaker Biography

Yuguo Song works as a Chief-physician and the Deputy Director at the Department of Occupational Medicine & Clinical Toxicology, Beijing Chaoyang Hospital, Capital Medical University (Beijing, China). He received his BS degree in Clinical Medicine from the University of Tsingdao Medical College, Shandong Province in 1990, and then he got his MD and PhD degree in Capital Medical University. He is the recipient of several research achievement awards including Wu Zhizhong Prize in Occupational Medicine (China) and International Travel Award from the American Academy of Clinical Toxicology. He worked as a Visiting Scholar in 2010 at West Virginia University, USA. His research focus is on occupational lung disease, clinical toxicology and nanotoxicology.

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