journals, such as the *European Respiratory Journal*, critically review papers like this. Eliciting concerns through provocative but unfounded titles and conclusions which are not justified by the data does not enhance the reputation of the *European Respiratory Journal*, its reviewers or its editors.

**J.D. Brain*, W. Kreyling[#] and P. Gehr[¶]**
*Dept of Environmental Health, Harvard School of Public Health, Boston, MA, USA. [#]Institute of Lung Biology and Disease, Helmholtz Zentrum München, German Research Center for Environmental Health, Neuherberg, Germany. [¶]Institute of Anatomy, University of Bern, Bern, Switzerland.

**Correspondence:** J.D. Brain, Dept of Environmental Health, Harvard School of Public Health, 665 Huntington Avenue, Building 1, Room 1308, Boston, MA 02115, USA. E-mail: brain@hsph.harvard.edu

**Statement of Interest:** A statement of interest for P. Gehr can be found at www.erj.ersjournals.commisc/statements.dtl

## REFERENCES

1 Song Y, Li X, Du X. Exposure to nanoparticles is related to pleural effusion, pulmonary fibrosis, and granuloma. *Eur Respir J* 2009; 34: 559–567.
2 Haruta M. Size and support dependency in the catalysis of gold. *Catalysis Today* 1997; 36: 153–166.
3 Nanoscience And Nanotechnologies: Opportunities And Uncertainties. The Royal Society and Royal Academy of Engineering. 2004. www.nanotec.org.uk/report/Nano%20report%202004%20fin.pdf
4 Brain JD, Curran MA, Donaghey T, *et al.* Biologic responses to nanomaterials depend on exposure, clearance, and material characteristics. *Nanotoxicology* 2009; 3: 174–180.

DOI: 10.1183/09031936.00159909

*From the Editors:*

The editorial decision to publish the second revision of the study by SONG *et al.* [1] on nanoparticle toxicity was extremely difficult and the points of J.D. Brain and co-workers are well made. There is no formal proof that nanoparticle exposure at this workplace caused pulmonary disease in and the death of several workers in a primitive workplace without any occupational safety measures. However, SONG *et al.* [1] excluded a number of fateful differential diagnoses and came to the conclusion that nanoparticles were the most likely cause.

Conclusions by analogy were made from what is known about quartz, asbestos and air pollution to nanoparticle toxicity and the available peer-reviewed literature suggests that nanoparticles have unusual toxicological properties. They induce the release of pro-inflammatory and chemotactic mediators by type II alveolar epithelial cells [2], stimulate mesenchymal cell growth, and cause fibrogenesis and granuloma formation, all of which have been reviewed elsewhere [3]; and all these pathomechanisms have most probably been taking place in the reported cases. Many national authorities remind the absence of systematic toxicological studies and, therefore, publish warnings regarding the use of nanoparticles within industry. Moreover, bioaccumulation in the food chain is currently under debate [4] and regulations to reduce or remove nanoparticles from waste streams are missing. The National Institute for Occupational Safety and Health in the USA is investigating the toxicity and health risks associated with occupational nanoparticle exposure and some research is also being funded by the European Commission and some European governments. However, under the assumption that most nanoparticles have to be estimated individually, and in view of the evidence of their effects beyond the organ of entry [5], and possible carcinogenesis [6], balanced and comprehensive toxicological statements will not be available in the near future. In this context the *European Respiratory Journal* decided to publish the work of SONG *et al.* [1] to stimulate awareness in both established and emerging industrialised nations, to serve our readers in the diagnostic work-up of granulomatous disorders, and to demonstrate to the authorities where action is needed.

The title and the discussion might overstress the finding but we felt that the circumstances at the workplace were well enough described to allow the reader to draw their own conclusion on the likelihood of nanoparticle toxicity.

**The European Respiratory Journal Editors**

## REFERENCES

1 Song Y, Li X, Du X. Exposure to nanoparticles is related to pleural effusion, pulmonary fibrosis and granuloma. *Eur Respir J* 2009; 34: 559–567.
2 Barlow PG, Clouter-Baker A, Donaldson K, *et al.* Carbon black nanoparticles induce type II epithelial cells to release chemotaxins for alveolar macrophages. *Part Fibre Toxicol* 2005; 2: 11.
3 Donaldson K, Aitken R, Tran L, *et al.* Carbon nanotubes: a review of their properties in relation to pulmonary toxicology and workplace safety. *Toxicol Sci* 2006; 92: 5–22.
4 Oberdorster E. Manufactured nanomaterials (fullerenes, C60) induce oxidative stress in the brain of juvenile largemouth bass. *Environ Health Perspect* 2004; 112: 1058–1062.
5 Elder A, Gelein R, Silva V, *et al.* Translocation of inhaled ultrafine manganese oxide particles to the central nervous system. *Environ Health Perspect* 2006; 114: 1172–1178.
6 Mroz RM, Schins RP, Li H, *et al.* Nanoparticle-driven DNA damage mimics irradiation-related carcinogenesis pathways. *Eur Respir J* 2008; 31: 241–251.

DOI: 10.1183/09031936.00169809