

**Title:** Comparison of deposited surface area of airborne ultrafine particles generated from two welding processes

**Author(s):** Gomes, J. F.<sup>1,2</sup>; Albuquerque, P. C.<sup>3</sup>; Miranda, Rosa M.<sup>4</sup>; Santos, Telmo G.<sup>4</sup>; Vieira, M. T.<sup>5</sup>

**Source:** Inhalation Toxicology

**Volume:** 24 **Issue:** 11

**Pages:** 774-781 **DOI:** 10.3109/08958378.2012.717648 **Published:** Sep 2012

**Document Type:** Article

**Language:** English

**Abstract:** This article describes work performed on the assessment of the levels of airborne ultrafine particles emitted in two welding processes metal-active gas (MAG) of carbon steel and friction-stir welding (FSW) of aluminium in terms of deposited area in alveolar tract of the lung using a nanoparticle surface area monitor analyser. The obtained results showed the dependence from process parameters on emitted ultrafine particles and clearly demonstrated the presence of ultrafine particles, when compared with background levels. The obtained results showed that the process that results on the lower levels of alveolar-deposited surface area is FSW, unlike MAG. Nevertheless, all the tested processes resulted in important doses of ultrafine particles that are to be deposited in the human lung of exposed workers.

**Author Keywords:** Welding; Ultrafine Particles; Alveolar-Deposited Surface Area

**KeyWords Plus:** Exposure; Lung; Workplace

**Reprint Address:** Gomes, JF (reprint author), Inst Super Engrn Lisboa, Area Dept Engrn Quim, P-1959007 Lisbon, Portugal.

**Addresses:**

1. Inst Super Engrn Lisboa, Area Dept Engrn Quim, P-1959007 Lisbon, Portugal
2. Univ Tecn Lisboa, Inst Biotecnol & Bioengn, Inst Super Tecn, P-1100 Lisbon, Portugal
3. Escola Super Tecnol Saude Lisboa, Inst Politecn Lisboa, Lisbon, Portugal
4. Univ Nova Lisboa, UNIDEMI, Dept Engrn Mecan & Ind, Fac Ciencias & Tecnol, Caparica, Portugal
5. Univ Coimbra, CEMUC, Dept Engrn Mecan, Fac Ciencias & Tecnol, P-3030290 Coimbra, Portugal

**E-mail Address:** jgomes@deq.isel.ipl.pt

**Publisher:** Informa Healthcare

**Publisher Address:** Telephone House, 69-77 Paul Street, London EC2A 4LQ, England

**ISSN:** 0895-8378

**Citation:** Gomes J F, Albuquerque P C, Miranda R M, Santos T G, Vieira M. Inhalation Toxicology. 2012; 11 (24): 774-781.