

Nanotubi e fullereni: attuali vedute sul possibile impatto ambientale e biologico delle bio-nanotecnologie

M. BOTTINI, A. MAGRINI*, N. BOTTINI**, A. BERGAMASCHI*

Dipartimento di Ingegneria Elettronica, Sezione di Optoelettronica, Università di Roma "Tor Vergata"

* Dipartimento di Biopatologia e Diagnostica per Immagini, Sezione di Medicina del Lavoro, Università di Roma "Tor Vergata"

** The Burnham Institute, La Jolla, CA

KEY WORDS

Nanotechnology; nanotubes; environmental impact; occupational risk

SUMMARY

«Nanotubes and fullerenes: an overview of the possible environmental and biological impact of bio-nanotechnologies». **Background:** Nanotechnology operates in a dimension that is invisible not only to the human eye but also to most highly sensitive instruments; this technology has made it possible to manufacture materials that have not existed in our environment before. In the medical sphere, many important applications in the diagnosis and treatment of diseases are foreseen. Up to now nanotechnology has evaded social, political and regulatory scrutiny concerning the safety of nano-particles in workplaces and in commercial products. **Objectives:** The present article reports the most important bio-medical applications of nanotechnology, followed by the results of research on the individual and environmental effects of nanomaterials and in particular of nanotubes, that are considered one of the most fascinating discoveries of the last millennium. **Methods:** A report is given on the data presented at the 225th ACS National Meeting (March 23-27, 2003, New Orleans, LA), division of Industrial and Engineering Chemistry. **Results:** Nanotubes and fullerenes are recently discovered different forms of carbon-based materials which are widely applied in various technical fields. One of the main concerns regarding these structures is that they resemble asbestos fibers. **Conclusions:** Although preliminary studies suggest that these materials are not associated with any health risk, many researchers highlight the need to assess possible risks of such structures before they become ubiquitous in every aspect of life.