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Altri autori (Persone)	GrassianVicki H
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Nota di contenuto	NANOSCIENCE AND NANOTECHNOLOGY; CONTENTS; Preface; Contributors; PART I ENVIRONMENTAL AND HEALTH IMPACTS OF NANOMATERIALS: OVERVIEW AND CHALLENGES; 1. Nanomaterials and the Environment; 1.1 Introduction; 1.2 Nanomaterials and the Environment; 1.2.1 Exposure; 1.2.2 Fate and Transport; 1.2.3 Transformation; 1.3 Nanomaterials and Biological Systems; 1.3.1 Exposure and Absorption; 1.3.2 Distribution; 1.3.3 Metabolism; 1.3.4 Excretion; 1.4 Conclusions and Directions for the Future; References; 2. Assessing the Life Cycle Environmental Implications of Nanomanufacturing: Opportunities and Challenges 2.1 Introduction2.2 Life Cycle Assessment and Challenges; 2.2.1 LCA Approach; 2.2.2 Nanotechnology LCA Challenges; 2.3 Life Cycle Assessment of Nanotechnology; 2.3.1 Expected Benefits; 2.3.2 Existing Work; 2.3.3 Inventory for LCA of Nanotechnology; 2.4 Carbon Nanofibers: A Case Study; 2.4.1 Life Cycle Energy Analysis; 2.4.2

Environmental LCA of Carbon Nanofibers; 2.5 Discussion of Nanotechnology LCA; 2.6 Future Directions: Predictive Approaches for LCA of Nanotechnology; 2.6.1 Input Side Indicators of Life Cycle Environmental Impact
2.6.2 Predictive Toxicology and Applications for Nanotechnology
2.7 Summary; References; 3. An Integrated Approach Toward Understanding the Environmental Fate, Transport, Toxicity, and Health Hazards of Nanomaterials; 3.1 Introduction; 3.2 Importance of an Integrated Approach Toward Understanding the Environmental Fate, Transport, Toxicity, and Health Hazards of Nanomaterials; 3.2.1 Recommendations from Recent Workshop and Agency Reports; 3.2.2 Nanoparticle Characterization: Bulk and Surface Properties; 3.2.3 Nanoparticle Characterization in Air and Water
3.2.4 Testing Strategies and Commonly Used Markers for Inflammation and Response, the Need for Additional In Vivo Measurements for Nanoparticles
3.2.5 Example of a Combined Characterization and Toxicological Study Design for Inhaled Nanomaterials and a Review of Some Recent Results; 3.3 Future Issues and Needs; Acknowledgments; References; PART II FATE AND TRANSPORT OF NANOMATERIALS IN THE ENVIRONMENT; 4. Properties of Commercial Nanoparticles that Affect Their Removal During Water Treatment; 4.1 Introduction; 4.2 Nanoparticle Properties; 4.2.1 Types of Nanoparticles; 4.2.2 Particle Size
4.2.3 Surface Charge
4.2.4 Quantification of Nanoparticles in Water; 4.3 Nanoparticle Removal Mechanisms During Water Treatment; 4.3.1 Coagulation; 4.3.2 Flocculation and Sedimentation; 4.3.3 Filtration; 4.4 Conclusions; Acknowledgments; References; 5. Transport and Retention of Nanomaterials in Porous Media; 5.1 Introduction; 5.2 The Subsurface Environment; 5.3 Nanomaterial Transport and Retention in Porous Media; 5.3.1 Nanoparticle Transport and Filtration; 5.3.2 Nanoparticle Aggregation; 5.3.3 Nanoparticle-Solid Interactions; 5.3.4 Nanoparticle Retention; 5.4 Summary; Acknowledgments
References

Sommario/riassunto

This comprehensive book covers various aspects of nanoscience and nanotechnology and what is known about the potential environmental and health impacts. Divided into three main sections, the book addresses the toxicity of nanomaterials, fate and transport of nanomaterials in the environment, and occupational health aspects of nanotechnology.
