

Toxicology of Natural and Man-Made Fibrous and Non-Fibrous Particles

Preface	1001
<i>Günter Oberdörster and Kevin E. Driscoll</i>	

Physical and Chemical Properties of Particles/Mechanisms of Toxicity

Mineral Properties and Their Contributions to Particle Toxicity	1003
<i>George D. Guthrie Jr.</i>	
Surface Reactivity in the Pathogenic Response to Particulates	1013
<i>Bice Fubini</i>	
Chemical Characterization and Reactivity of Iron Chelator-treated Amphibole Asbestos	1021
<i>Julie Gold, Helena Amandusson, Anatol Krozer, Bengt Kasemo, Tore Ericsson, Giovanna Zanetti, and Bice Fubini</i>	
Study of the Stability of a Paramagnetic Label Linked to Mesoporous Silica Surface in Contact with Rat Mesothelial Cells in Culture	1031
<i>Laura Mollo, Valerie Levesse, Maria F. Ottaviani, Sophie Ellouk-Achard, Marie-Claude Jaurand, and Bice Fubini</i>	
Demonstration of Nitric Oxide on Asbestos and Silicon Carbide Fibers with a New Ultraviolet Spectrophotometric Assay	1037
<i>Per Leanderson, Verner Lagesson, and Christer Tagesson</i>	
Can Microwave Radiation at High Temperatures Reduce the Toxicity of Fibrous Crocidolite Asbestos?	1041
<i>Mairam Gulumian, Zolani L. Nkosibomvu, Kalavati Channa, and Herman Pollak</i>	
Significance of the Biodurability of Man-made Vitreous Fibers to Risk Assessment	1045
<i>Hartwig Muhle and Bernd Bellmann</i>	
Investigations on Health-related Properties of Two Sepiolite Samples	1049
<i>Bernd Bellmann, Hartwig Muhle, and Heinrich Ernst</i>	
Bioavailable Transition Metals in Particulate Matter Mediate Cardiopulmonary Injury in Healthy and Compromised Animal Models	1053
<i>Daniel L. Costa and Kevin L. Dreher</i>	

Carcinogenesis and Genotoxicity

Oncogenes and Tumor-Suppressor Genes in Mesothelioma—A Synopsis	1061
<i>John F. Lechner, Johannes Tesfaygi, and Brenda I. Gerwin</i>	
Susceptibility of <i>p53</i> -deficient Mice to Induction of Mesothelioma by Crocidolite Asbestos Fibers	1069
<i>Jean M. Marsella, Brenda L. Liu, Charles A. Vaslet, and Agnes B. Kane</i>	
Mechanisms of Fiber-induced Genotoxicity	1073
<i>Marie-Claude Jaurand</i>	
Malignant Transformation of Immortalized Human Bronchial Epithelial Cells by Asbestos Fibers	1085
<i>Tom K. Hei, Li J. Wu, and Chang Q. Piao</i>	
Neutrophils Amplify the Formation of DNA Adducts by Benzo[<i>a</i>]pyrene in Lung Target Cells	1089
<i>Paul J.A. Borm, Ad M. Knaapen, Roel P.F. Schins, Roger W.L. Godschalk, and Frederik-Jan Van Schooten</i>	
A New Mechanism for DNA Alterations Induced by Alpha Particles Such as Those Emitted by Radon and Radon Progeny	1095
<i>Bruce E. Lehmert and Edwin H. Goodwin</i>	
Fiber-specific Molecular Features of Tumors Induced in Rat Peritoneum	1103
<i>Klaus Unfried, Markus Roller, Friedrich Pott, Johannes Friemann, and Walter Dehnen</i>	
Mechanism of Asbestos-mediated DNA Damage: Role of Heme and Heme Proteins	1109
<i>Qamar Rahman, Nayyara Mahmood, Sikander G. Khan, Jamal M. Arif, and Mohammad Athar</i>	
Asbestos, Asbestosis, and Lung Cancer: Observations in Quebec Chrysotile Workers	1113
<i>Bruce W. Case and André Dufresne</i>	

Intracellular Signaling Pathways

Cell Signaling Pathways Elicited by Asbestos	1121
<i>Brooke T. Mossman, Steven Faux, Yvonne Janssen, Luis A. Jimenez, Cynthia Timblin, Christine Zanella, Jonathan Goldberg, Eric Walsh, Aaron Barchowsky, and Kevin Driscoll</i>	

Possible Role of Lipid Peroxidation in the Induction of NF- κ B and AP-1 in RFL-6 Cells by Crocidolite Asbestos: Evidence following Protection by Vitamin E	1127
<i>Stephen P. Faux and Peter J. Howden</i>	
Increased Focal Adhesion Kinase- and Urokinase-type Plasminogen Activator Receptor-associated Cell Signaling in Endothelial Cells Exposed to Asbestos	1131
<i>A. Barchowsky, B.M. Lannon, L.C. Elmore, and M.D. Treadwell</i>	
Asbestos and Silica-induced Changes in Human Alveolar Macrophage Phenotype	1139
<i>Andrij Holian, Margaret O. Uthman, Tatiana Goltsova, Steven D. Brown, and Raymond F. Hamilton Jr.</i>	
<i>p53</i> , <i>Cip1</i> , and <i>Gadd153</i> Expression following Treatment of A549 Cells with Natural and Man-made Vitreous Fibers	1143
<i>Neil F. Johnson and Richard J. Jaramillo</i>	
Crocidolite Asbestos Induces Apoptosis of Pleural Mesothelial Cells: Role of Reactive Oxygen Species and Poly(ADP-ribosyl) Polymerase	1147
<i>V. Courtney Broaddus, Lin Yang, Louis M. Scavo, Joel D. Ernst, and Alice M. Boylan</i>	
Alterations in Protein Glycosylation in PMA-differentiated U-937 Cells Exposed to Mineral Particles	1153
<i>Nourredine Trabelsi, Anne Greffard, Jean-Claude Pairon, Jean Bignon, Giovanna Zanetti, Bice Fubini, and Yannick Pilatte</i>	
Cytokines/Immune Mechanisms	
Cytokines and Particle-induced Inflammatory Cell Recruitment	1159
<i>Kevin E. Driscoll, Janet M. Carter, Diana G. Hassenbein, and Brian Howard</i>	
Analyzing the Genes and Peptide Growth Factors Expressed in Lung Cells <i>in Vivo</i> Consequent to Asbestos Exposure and <i>in Vitro</i>	1165
<i>Arnold R. Brody, Jing-Yao Liu, David Brass, and Miriam Corti</i>	
Effects of Mineral Fibers on the Expression of Genes Whose Product May Play a Role in Fiber Pathogenesis	1173
<i>Tohru Tsuda, Yasuo Morimoto, Hiroshi Yamato, Hiromi Nakamura, Hajime Hori, Nobuhiko Nagata, Masamitsu Kido, Toshiaki Higashi, and Isamu Tanaka</i>	
Particulate-Cell Interactions and Pulmonary Cytokine Expression	1179
<i>Jacob N. Finkelstein, Carl Johnston, Ted Barrett, and Günter Oberdörster</i>	
Localization of Intercellular Adhesion Molecule-1 (ICAM-1) in the Lungs of Silica-exposed Mice	1183
<i>Ricardo C. Nario and Andrea K. Hubbard</i>	
Alveolar Macrophage Interaction with Air Pollution Particulates	1191
<i>Carroll-Ann Goldsmith, Charles Frevert, Amy Imrich, Constantinos Sioutas, and Lester Kobzik</i>	
Immunohistochemical Localization of Transforming Growth Factor Beta Isoforms in Asbestos-related Diseases	1197
<i>Jaishree Jagirdar, Theodore C. Lee, Joan Reibman, Leslie I. Gold, Christopher Aston, Raymond Bégin, and William N. Rom</i>	
Models/Mechanisms	
Early Mesothelial Cell Proliferation after Asbestos Exposure: <i>In Vivo</i> and <i>in Vitro</i> Studies	1205
<i>Ian Y.R. Adamson</i>	
Comparison of Pleural Responses of Rats and Hamsters to Subchronic Inhalation of Refractory Ceramic Fibers	1209
<i>Jeffrey I. Everitt, Thomas R. Gelzleichter, Edilberto Bermudez, James B. Mangum, Brian A. Wong, Derek B. Janszen, and Owen R. Moss</i>	
Mechanisms of Mineral Dust-induced Emphysema	1215
<i>Andrew Churg, Katalin Zay, and Kevin Li</i>	
Lung Proliferative and Clearance Responses to Inhaled <i>para</i> -Aramid RFP in Exposed Hamsters and Rats: Comparisons with Chrysotile Asbestos Fibers	1219
<i>David B. Warheit, Suzanne I. Snajdr, Mark A. Hartsky, and Steven R. Frame</i>	
Chronic Inhalation Study of Fiber Glass and Amosite Asbestos in Hamsters: Twelve-month Preliminary Results	1223
<i>T.W. Hesterberg, C. Axten, E.E. McConnell, G. Oberdörster, J. Everitt, W.C. Müller, J. Chevalier, G.R. Chase, and P. Thevenaz</i>	
Sites of Particle Retention and Lung Tissue Responses to Chronically Inhaled Diesel Exhaust and Coal Dust in Rats and Cynomolgus Monkeys	1231
<i>Kristen J. Nikula, Kelly J. Avila, William C. Griffith, and Joe L. Mauderly</i>	
Short-term Inhalation and <i>in Vitro</i> Tests as Predictors of Fiber Pathogenicity	1235
<i>Richard Thomas Cullen, Brian George Miller, John Michael Gordon Davis, David McAllister Brown, and Kenneth Donaldson</i>	
Silica-induced Apoptosis in Alveolar and Granulomatous Cells <i>in Vivo</i>	1241
<i>James Leigh, He Wang, Antonio Bonin, Matthew Peters, and Xiuyao Ruan</i>	
Expression of Matrix Metalloproteinases, Tissue Inhibitors of Metalloproteinases, and Extracellular Matrix mRNA following Exposure to Mineral Fibers and Cigarette Smoke <i>in Vivo</i>	1247
<i>Yasuo Morimoto, Tohru Tsuda, Hiromi Nakamura, Hajime Hori, Hiroshi Yamato, Nobuhiko Nagata, Toshiaki Higashi, Masamitsu Kido, and Isamu Tanaka</i>	

Contents, continued

Dose-Response Relationship of Fibrous Dusts in Intraperitoneal Studies	1253
<i>Markus Roller, Friedrich Pott, Kenji Kamino, Gerhard-Heinrich Althoff, and Bernd Bellmann</i>	
Pleural Macrophage Recruitment and Activation in Asbestos-induced Pleural Injury	1257
<i>Nonghoon Choe, Shogo Tanaka, Weijia Xia, David R. Hemenway, Victor L. Roggli, and Elliott Kagan</i>	
Cell Size of Alveolar Macrophages: An Interspecies Comparison	1261
<i>Fritz Krombach, Silvia Münzing, Anne-Marie Allmeling, J. Tilman Gerlach, Jürgen Behr, and Martina Dörger</i>	
Intratracheal Instillation versus Intratracheal Inhalation: Influence of Cytokines on Inflammatory Response	1265
<i>M. Osier, R.B. Baggs, and G. Oberdörster</i>	

Oxidative Stress

Efflux of Reduced Glutathione after Exposure of Human Lung Epithelial Cells to Crocidolite Asbestos	1273
<i>Scott A. Golladay, Sun-Hee Park, and Ann E. Aust</i>	
In Vivo and in Vitro Proinflammatory Effects of Particulate Air Pollution (PM₁₀)	1279
<i>X.Y. Li, P.S. Gilmour, K. Donaldson, and W. MacNee</i>	
Free Radical Activity of PM₁₀: Iron-mediated Generation of Hydroxyl Radicals	1285
<i>Kenneth Donaldson, David M. Brown, Colin Mitchell, Miglena Dineva, Paul H. Beswick, Peter Gilmour, and William MacNee</i>	
Formation and Persistence of 8-Oxoguanine in Rat Lung Cells as an Important Determinant for Tumor Formation following Particle Exposure	1291
<i>Peter Nehls, Frank Seiler, Bernd Rehn, Ruth Greferath, and Joachim Bruch</i>	
Expression of Inducible Nitric Oxide Synthase and Formation of Nitric Oxide by Alveolar Macrophages: An Interspecies Comparison	1297
<i>Natalie K. Jesch, Martina Dörger, Georg Enders, Gabriele Rieder, Claus Vogelmeier, Konrad Messmer, and Fritz Krombach</i>	
The Role of Reactive Oxygen and Nitrogen Species in the Response of Airway Epithelium to Particulates	1301
<i>Linda D. Martin, Thomas M. Krunkosky, Janice A. Dye, Bernard M. Fischer, Nan Fei Jiang, Lori G. Rochelle, Nancy J. Akley, Kevin L. Dreher, and Kenneth B. Adler</i>	
Interspecies Comparison of Rat and Hamster Alveolar Macrophage Antioxidative and Oxidative Capacity	1309
<i>Martina Dörger, Anne-Marie Allmeling, Ariane Neuber, Jürgen Behr, Walter Rambeck, and Fritz Krombach</i>	
Free Radical Activity of Industrial Fibers: Role of Iron in Oxidative Stress and Activation of Transcription Factors	1313
<i>Peter S. Gilmour, David M. Brown, Paul H. Beswick, William MacNee, Irfan Rahman, and Kenneth Donaldson</i>	
Augmentation of Pulmonary Reactions to Quartz Inhalation by Trace Amounts of Iron-containing Particles	1319
<i>Vincent Castranova, Val Vallyathan, Dawn M. Ramsey, Jeffrey L. McLaurin, Donna Pack, Steven Leonard, Mark W. Barger, Jane Y.C. Ma, Nar S. Dalal, and Alex Teass</i>	
Involvement of Protein Kinase C, Phospholipase C, and Protein Tyrosine Kinase Pathways in Oxygen Radical Generation by Asbestos-stimulated Alveolar Macrophage	1325
<i>Young Lim, Sun-Hyung Kim, Kyoung-Ah Kim, Min-Wha Oh, and Kweon-Haeng Lee</i>	

Approaches to Safety Evaluation and Risk Assessment

Approaches to Characterizing Human Health Risks of Exposure to Fibers	1329
<i>Vanessa T. Vu and David Y. Lai</i>	
Relevance of Particle-induced Rat Lung Tumors for Assessing Lung Carcinogenic Hazard and Human Lung Cancer Risk	1337
<i>Joe L. Mauderly</i>	
Pulmonary Carcinogenicity of Inhaled Particles and the Maximum Tolerated Dose	1347
<i>G. Oberdörster</i>	
Strategies for Setting Occupational Exposure Limits for Particles	1357
<i>Helmut A. Greim and Kyriakoula Ziegler-Skylakakis</i>	
Use of Mechanistic Data in Assessing Human Risks from Exposure to Particles	1363
<i>Roger O. McClellan</i>	
Editorial Committee for the Sixth International Meeting on the Toxicology of Natural and Man-Made Fibrous and Non-Fibrous Particles	1373

Editorial Policy	1375
Instructions to Authors	1376
Subscription Information	1378
Published Volumes of EHP Supplements	1380