

TENTATIVE TECHNICAL PROGRAM



2020 JOHNSON/ROOK CONFERENCE ON ASBESTOS

Sponsored by ASTM Committee D22 on Air Quality.

August 2-6, 2021
Double Tree by Hilton
Burlington, VT, USA

Conference Co-Chairs: James Millette
Millette Technical Consulting
Lilburn, GA, USA

James Webber
Webber Environmental Health Consulting
Bend, OR, USA

ABOUT THE CONFERENCE

Since 1986, the Johnson Conferences have served as forums for the discussion of asbestos issues. Held in the beautiful summers of northern Vermont, the Johnson Conference is being renamed the “Johnson/Rook Conference” in honor of Dr. Harry S. Rook, chair of the first eight Johnson Conferences.

To encourage forthright presentations and discussions of novel ideas and controversial issues, the Johnson/Rook Conferences have a tradition of no recordings, reports, or publications. As such, these conferences have generated lively exchanges of ideas that have shaped many of the asbestos monitoring methods and strategies used today. While the tradition of no recording will be maintained at this Johnson/Rook 2020 Conference, the publication of full papers will be encouraged for an issue of ASTM’s Selected Technical Papers (STP), an online and printed, peer-reviewed publication for the international scientific and engineering community, to be published after the meeting following peer-review of the manuscripts through the ASTM formal review process.

Presentations will be made in the following sessions:

- Medical Research, Dose/Response, Toxicology, and Human Tissue
- Mineralogy and Nomenclature
- Sampling, Exposure Assessment, and Risk Characterization
- Environmental Monitoring and Remediation
- International and Domestic Analytical Methods
- Soils, Natural Occurrences of Asbestos, Talc, and Vermiculite Products
- Asbestos Analysis and Quality Assurance
- Litigation and Science
- Other Potentially Hazardous Particles

MONDAY, AUGUST 2, 2021

7:00 AM

Registration

9:00 AM

Welcome

James Millette, Conference Co-Chair

Dedication to Harry Rook

James Webber, Conference Co-Chair

9:20 AM

Introductory Talk: Why Are We Here? The Past

James Webber, Webber Environmental Health Consulting LLC, Bend, OR, USA

**SESSION 1: MEDICAL RESEARCH, DOSE/RESPONSE,
TOXICOLOGY, AND HUMAN TISSUE**

(Moderated by Lee Poye and Murray Finkelstein)

9:40 AM

**Assessing the Usefulness and Assigning Responsibility for Publication of Historical Cohort
Data: The 1891-1920 Birth Cohort of Quebec Chrysotile Miners and Millers**

Bruce Case, McGill University, Montreal, Quebec, Canada

10:10 AM

**30-Day Nose Only Inhalation Repeated Exposure of Libby Amphibole 2007 in Male and
Female Harlan Sprague Dawley Rats**

Karen E. Elsass¹, Barney R. Sparrow¹, Jenni Gorospe¹, Amit Gupta¹, Anbo Wang¹, Anthony Skowronek¹, Jamie Richey¹, John Shaw¹, Emily Cheng¹, Sridhar Jaligama¹, Robyn Ray², and Matt Stout³

¹Battelle Memorial Institute, Columbus, OH, USA; ²EMSL Analytical, Inc., Cinnaminson, NJ, USA; ³National Toxicology Program, Research Triangle Park, NC, USA

10:30 AM

**Established Case of Development of Lung Diseases Due to Exposure of Asbestos Actinolite
and Asbestos Ferro-Actinolite of Miners in the Salau Mine**

Maxine Misseri, Sorbonne University, Compigne, France

11:00 AM

**Carto PMAi: A Measurement Campaign to Evaluate the Exposure of the Workers and the
General Population to the EMP of Interest**

Erell Léocat, Christine Deneuvillers and Patrick Richard, OPPBTP, Boulogne-Billancourt, France

11:30 AM

**Minnesota Taconite Workers Health Study: An Overview of the Mineral Characteristics of
Airborne Particulate Matter**

Stephen Monson Geerts, Lawrence M. Zanko and George J. Hudak, University of Minnesota
Duluth, Duluth, MN, USA

11:50 AM

Research on Current Non-Occupational Exposure to Asbestos

Pierina Otness, Department of Health Western Australia, Lesmurdie, Australia

12:20 PM LUNCH (on your own)

1:50 PM

Lung Tissue Preparation for Fiber Burden and Particle Size Analysis: Lessons Learned

Robyn Ray², Ben Ellis², John Shaw¹, Jamie Richey¹, Karen E. Elsass¹, Barney R. Sparrow¹, Jenni Gorospe¹, and Matt Stout³

¹Battelle Memorial Institute, Columbus, OH, USA; ²EMSL Analytical, Inc., Cinnaminson, NJ, USA; ³National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA

2:10 PM

Fibrosity and Frequency of Asbestos and Other REMPs in Human Tissue

Lee Poye, J3 Resources, Houston, TX, USA

2:30 PM

Method Development and Conduct of Studies to Support the Evaluation of the Toxicologic and Carcinogenic Potential of Naturally Occurring Asbestos and Related Mineral Fibers in Laboratory Animals via Nose-Only Inhalation for the National Toxicology Program

Jamie Richey¹, John Shaw¹, Amit Gupta¹, Anbo Wang¹, Karen E. Elsass¹, Barney R. Sparrow¹, Robyn Ray², Ben Ellis², and Matt Stout³

¹Battelle Memorial Institute, Columbus, OH, USA; ²EMSL Analytical, Inc., Cinnaminson, NJ, USA; ³National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA

2:50 PM

Size Distributions of Amphibole EMPs Used in Two Independent Intra-Peritoneal Injection Studies on Rats

Eric Chatfield, Chatfield Technical Consulting Limited, Mississauga, Ontario, Canada

3:20 PM BREAK

3:40 PM

Fiber Analysis Comparisons of Libby Amphibole 2007 During Inhalation Toxicology Studies

John Shaw¹, Jamie Richey¹, Karen E. Elsass¹, Barney R. Sparrow¹, Robyn Ray², and Matt Stout³

¹Battelle Memorial Institute, Columbus, OH, USA; ²EMSL Analytical, Inc., Cinnaminson, NJ, USA; ³ National Institute of Environmental Health Sciences, Research Triangle Park, NC, USA

4:00 PM

Mesothelioma Due to Cosmetic Talc Exposure

Jacqueline Moline¹ and Ronald Gordon²

¹Northwell Health, Great Neck, NY, USA; ²Mount Sinai School of Medicine, New York, NY, USA

4:20 PM

The Impact of Asbestos on Society

Yvonne Waterman, St. European Asbestos Forum Foundation, Wouwse Plantage, Netherlands

4:40 PM CONFERENCE ADJOURNS FOR THE DAY

6:00 PM RECEPTION

TUESDAY, AUGUST 3, 2021

SESSION 2: MINERALOGY AND NOMENCLATURE

(Moderated by Bryan Bandli and Brad Van Gosen)

9:00 AM

Amphiboles: Classification, Pitfalls and Petrology

John Schumacher, Portland State University, Portland, OR, USA

9:30 AM

Particle Size Populations in Amphibole and Phyllosilicate Minerals

Melinda Dyar¹, Kenneth Livi² and Mark Bailey³

¹Mount Holyoke College, South Hadley, MA, USA; ²Johns Hopkins University, Baltimore, MD, USA; ³Asbestos TEM Laboratories, Berkeley, CA, USA

10:00 AM

Reducing Elongate Mineral Particle Exposure in Mining: Geology and Nomenclature

Susan Wacaster, NIOSH, Pittsburgh, PA, USA

10:30 AM

Characterization of the Lone Pine, CA Amphibole Asbestos Ref Certification Compared to a Client's 10 Gram Sample with Observations and Findings of More than One Amphibole (Tremolite and Anthophyllite) on the Bulk, Selective Sieving and Biased Samplings

Gary Tomaino and Lauren Olsen, Minerals Technologies, Inc. Easton, PA, USA

10:50 AM

Practical Assessment of Techniques for Isolating Particles Observed by PLM for Examination by TEM and SEM/EBSD for Phase Discrimination

Monica McGrath-Koerner, Bryan Bandli and Elizabeth Fisher, RJ Lee Group, Monroeville, PA, USA

11:10 AM

Preliminary Compositional Comparison from Tremolite Specimens of Varying Morphology and Mineralogy

Bryan Bandli, Rich Lee, Ashleigh Sload and Jacquelyn Mershon, RJ Lee Group, Monroeville, PA, USA

11:30 AM

Recognizing the Clarion Call to Definitional Paradigm Shifts in Asbestos Analysis

Sean Fitzgerald, Scientific Analytical Institute, Inc., Greensboro, NC, USA

12:00 PM LUNCH (on your own)

SESSION 3: SAMPLING, EXPOSURE ASSESMENT AND RISK CHARACTERIZATION

(Moderated by Lynn Woodbury and Jeanne Spencer)

1:30 PM

Methods for Utilizing Low-Count Asbestos Data in Asbestos Risk Assessment

Catherine Armstead, Neptune and Company, Inc., Lakewood, CO, USA

1:50 PM

Libby – Some Lessons Learned

David Berry¹ and Lynn Woodbury²

¹USEPA Region 8, Denver, CO, USA; ²CDM Smith, Denver, CO, USA

2:10 PM

Asbestos Fiber Release Studies Using a Constructed Simulation Chamber

Steven P. Compton, Ph.D.¹ and James R. Millette, Ph.D., D-IBFES²

¹MVA Scientific Consultants, Duluth, GA, USA; ²Millette Technical Consulting, Lilburn, GA, USA

2:40 PM

Asbestos Exposure Resulting from Cleaning and Maintenance Activities in Apartments with Asbestos-Containing Sprayed Ceiling Applications

William Ewing¹, James R. Millette² and Chris DePasquale¹

¹Compass Environmental Inc., Kennesaw, GA, USA; ²Millette Technical Consulting, Lilburn, GA, USA

3:10 PM BREAK

3:30 PM

Risk Assessment of Exposure to Asbestos During the Operation and Maintenance of Armored Combat Vehicles, IDF, Israel

Nili Greenberg^{1,2} Ph.D. and Shimshon Lerman³ Ph.D.

¹IDF, Medical Corps, Occupational Health Branch; ²School of Public Health, University of Haifa, Israel; ³Emeritus, Environmental Engineering, Ben-Gurion University, Israel

3:50 PM

Naturally Occurring Asbestos Sites: Italian Experience on Risk Assessment and Management

Sergio Malinconico¹, Beatrice Conestabile della Staffa¹, Daniele Taddei², Paolo De Simone¹

¹INAIL - Italian Workers' Compensation Authority - Research, Certification and Verification
DIT - Department of Technological Innovations and Safety of Plants, Products and Anthropoc Settlements, Rome, Italy; ²“La Sapienza” University of Rome, Italy

4:10 PM

Evaluation of Airborne Tremolite and Tremolite Asbestos During Application of Spiked Cosmetic Talcum Powder

Alan Segrave¹ and Eric Miller²

¹Bureau Veritas North America, Inc, Kennesaw, GA, USA; ²Cardno ChemRisk, Chicago, IL, USA

4:40 PM

Update to the 2008 Framework for Investigation of Asbestos-Contaminated Superfund Sites

Julie Wroble¹, Chuck Nace², David Berry³, Nardina Turner⁴, Tim Frederick⁴, Christine Deneuvillers⁵, Patrick Richard⁵

¹US EPA, Seattle, WA, USA; ²US EPA, New York, NY, USA; ³US EPA, Denver, CO, USA; ⁴US EPA, Atlanta, GA, USA; ⁵OPPBTP, Boulogne, Billancourt, France

5:00 PM CONFERENCE ADJOURNS FOR THE DAY

WEDNESDAY, AUGUST 4, 2021

**SESSION 3: SAMPLING, EXPOSURE ASSESMENT AND
RISK CHARACTERIZATION (Cont'd)**

(Moderated by Lynn Woodbury and Jeanne Spencer)

9:00 AM

Refinement of Sampling and Analysis Techniques for Asbestos in Soil: A Comparison of Performance Evaluation and Site Samples

Tim Frederick¹ and Julie Wroble²

¹US EPA, Atlanta, GA, USA; ²US EPA, Seattle, WA, USA

9:20 AM

Evaluation of Fiber Releasability of Asbestos Cement Materials by TEM and PCM

Tianbao Bai¹, William Colbert², Andrew Olberta³ and James Millette⁴

¹Eurofins CEI, Inc., Cary, NC, USA; ²Eurofins J3 Resources, Inc., Houston, TX, USA; ³The Environmental Consultancy, Austin, TX, USA; ⁴Millette Technical Consulting, Lilburn, GA, USA

9:50 AM

Asbestos and Risk: Drawing the Line(s)

Andrew Havics, pH2, LLC, Avon, IN, USA

SESSION 4: ENVIRONMENTAL MONITORING AND REMEDIATION

(Moderated by Julie Wroble and Brad Erskine)

10:20 AM

Analysis of Personal Air Monitoring Data from the Calaveras Dam Replacement Project (CDRP), Fremont, California

Bradley Erskine¹ and Dan Hernandez²

¹Erskine Environmental Consulting, Inc., Benecia, CA, USA; ²RESCAPE Environmental, LLC, San Jose, CA, USA

10:50 AM

Background Levels of Asbestos Detected Throughout the City of Houston Fourth Largest City in the US

Lee Poye, Scott Ward and William Colbert, J3 Resources, Inc., Houston, TX, USA

11:20 AM

Analysis of Baseline and Perimeter Air Monitoring Data from the Calaveras Dam Replacement Project (CDRP), Fremont, California

Bradley Erskine, Erskine Environmental Consulting, Inc., Benecia, CA, USA

11:50 PM LUNCH (on your own)

1:10 PM

A Review of Perimeter Air Monitoring Data from the Boulder City Bypass Project in Nevada

Lynn Woodbury, CDM Smith, Denver, CO, USA

1:30 PM

North Ridge Estates: Superfund Remedial Action Completed

Julie Wroble¹, Linda Meyer¹, Robert Tan¹; Derek Wintle², Sarah Babcock³

¹US EPA, Seattle, WA, USA; ²CDM Smith, Denver, CO, USA; ³EA Engineering, Science and Technology, Inc., PBC, Greenwood Village, CO, USA

1:50 PM

The Vermont Asbestos Group Mine: Past, Present and Future

Thomas Broido¹ and John Schmeltzer²

¹ATC Group Services, LLC, Williston, VT, USA; ²Vermont Department of Environmental Conservation, Montpelier, VT, USA

2:10 PM

US EPA Removal Action at the Vermont Asbestos Group Mine, Eden and Lowell, VT

Gary Lipson, US EPA, Boston, MA, USA

2:30 PM

Asbestos in Solis Assessment Former Carolina Asbestos Company Site, Davidson, NC

Michael Schrum¹ and Robert DeMalo, M.Sc²

¹Terracon Consultants, Inc., Charlotte, NC, USA; ²EMSL Analytical, Inc., Cinnaminson, NJ, USA

2:50 PM

BREAK

SESSION 5: INTERNATIONAL AND DOMESTIC ANALYTICAL METHODS

(Moderated by Reiner Koenig and Eric Chatfield)

3:10 PM

Studies on the Equivalence of Air and Water Elutriation of Amphibole EMPs

Eric Chatfield, Chatfield Technical Consulting Limited, Mississauga, Ontario, Canada

3:40 PM

Regulation of Asbestos in Soil, Water and Recycled Materials

Pierina Otness, Department of Health Western Australia, Lesmurdie, Australia

4:10 PM

Asbestos Destruction: European Proposal on Thermal, Chemical and Biological Processes

Federica Paglietti¹, Sergio Bellagamba¹, Crescenzo Massaro² and Ivano Lonigro²

¹INAIL - Department of Technological Innovations and Safety of Plants, Products and Anthropogenic Settlements (DIT), Rome, Italy; ²Sapienza – Università Di Roma, Department of Chemical Engineering Materials & Environment, Rome, Italy

4:40 PM

AI-Driven, Automated PCM for the Diagnostic of Fibers in Air Samples

David Mendels, xRapid-Group, Aix en Provence, France

5:10 PM

CONFERENCE ADJOURNS FOR THE DAY

THURSDAY, AUGUST 5, 2021

SESSION 5: INTERNATIONAL AND DOMESTIC ANALYTICAL METHODS (Cont'd)

(Moderated by Reiner Koenig and Eric Chatfield)

9:00 AM

Real-Time Measurement of Fibers Using KOFAM, A Differential Mobility Analyzer with an Optical Particle Counter

Hyunwook Kim, The Catholic University of Korea, Seoul, Republic of Korea

9:20 AM

NIOSH 7400 Update

Martin Harper, Zefon International, Inc., Ocala, FL, USA

9:40 AM

Evaluation of TEM Methods in Asbestos Identification

Kenneth Livi¹, Darby Dyer² and Marie Annick Billon-Galland³

¹Johns Hopkins University, Baltimore, MD, USA; ²South Hadley, MA, USA; ³Malakoff, France

10:00 AM

Detection of Asbestos in Materials Based on Its Optical Properties

Cedric Duee¹, Jeremy Surcin², Hubert Haas¹, Xavier Bourrat³, Jean-Baptiste Renard² and Patrick Charpentier⁴

¹BRGM, Orléans, France; ²LPC2E-CNRS, Orléans, France; ³BRGM, Reims, France; ⁴MeteoModern, Ury, France

10:20 AM

Amosite and Grunerite Size Separation with Shaking and Filtration Methods

Taekhee Lee, Rachel Walker, Jon Hummer, Elizabeth Ashley and Steven Mischler

National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Pittsburgh, PA, USA

10:40 AM

The Future of Asbestos (Denaturation of Asbestos Waste)

Yvonne Waterman, St. European Asbestos Forum Foundation, Wouwse Plantage, Netherlands

11:00 AM

Japan's Asbestos Definition – The Cause of Much Conflict

Takeshi Kaneko, EFA Laboratories Co, LTD, Tokyo, Japan

SESSION 6: SOILS, NATURAL OCCURRENCES OF ASBESTOS, TALC AND VERMICULITE PRODUCTS

(Moderated by Mark Bailey and Myron Getman)

11:20 AM

Potential Effects on Naturally Occurring Asbestos (NOA) Concentrations Identified in the Environment Resulting from the Application of Asbestos Definitions Put Forth by the FDA's Interagency Working Group on Asbestos in Consumer Products (IWGACP) Executive Summary Report Dated January 6, 2020

R. Mark Bailey, Asbestos TEM Labs, Berkeley, CA, USA

11:40 AM

The Use of Scanning Transmission Electron Microscopy Energy Dispersive Spectroscopy (STEM-EDS) in the Investigation of Talc Consumer Products

Mark Krekeler, Miami University, Oxford, OH, USA

12:00 PM LUNCH (on your own)

1:30 PM

Assessment of NOA and Cosmetic Talc – A Case Study

Alan Segrave, Bureau Veritas North America, Inc., Kennesaw, GA, USA

2:00 PM

Review of XRD and Round Robin Testing as Part of the Method for the Analysis of Cosmetic and Pharmaceutical Grade Talc for Asbestos Under ASTM D22.07 and Under the USP Expert Talc Panel

Gary Tomaino, Minerals Technologies, Inc., Easton, PA, USA

2:20 PM

An Evaluation of Methods Used for Quantification of Asbestos in Geologic Materials

Ashleigh Sload, R.J. Lee Group, Monroeville, PA, USA

2:40 PM

Heavy Liquid Separation of Mineral Powder for TEM Analysis

Jeanne Spencer, Reservoirs Environmental, Inc., Denver, CO, USA

3:10 PM BREAK

3:30 PM

Detection of Amphibole Fibers in Chrysotile-Containing Products

Steven Compton, Ph.D.¹ and James R. Millette, Ph.D., D-IBFES²

¹MVA Scientific Consultants, Duluth, GA, USA; ²Millette Technical Consulting, Lilburn, GA, USA

4:00 PM

Comparing Historical and Recent Accelerated Concerns Regarding Asbestos in Talc

Sean Fitzgerald, Scientific Analytical Institute, Inc., Greensboro, NC, USA

SESSION 7: ASBESTOS ANALYSIS AND QUALITY ASSURANCE

(Moderated by Robyn Ray and Tom Laubenthal)

4:30 PM

Challenges in Obtaining EDX Analysis Data of Sufficient Quality to Differentiate the Asbestiform Amphiboles

R. Mark Bailey, Asbestos TEM Labs, Berkeley, CA, USA

5:00 pm

Detection Limit (LOD) and Limit of Quantification (LOQ) Using Microscopical Methods in Asbestos Analysis

Reiner Koenig, APC GmbH, Eschborn, Germany

5:30 PM CONFERENCE ADJOURNS FOR THE DAY

FRIDAY, AUGUST 6, 2021

SESSION 7: ASBESTOS ANALYSIS AND QUALITY ASSURANCE (Cont'd)

(Moderated by Robyn Ray and Tom Laubenthal)

9:00 AM

ASTM International Research Report and Inter Laboratory Study for Development and Validation of ASTM D6480-19 Standard Test Method for Wipe Sampling of Surfaces, Indirect Preparation and Analysis for Asbestos Structure Number Surface Loading by TEM

Frank Ehrenfeld, International Asbestos Testing Laboratories, Mt. Laurel, NJ, USA

9:30 AM

ASTM International D22 Committee on Air Quality: Review of Recent Produced and Current Tracks for eLearning Modules

Frank Ehrenfeld, International Asbestos Testing Laboratories, Mt. Laurel, NJ, USA

10:00 AM

Updated PLM Method References for Reporting and Controlled Documents for NVLAP-Accredited Laboratories

Tom Laubenthal, The Environmental Institute, Marietta, GA, USA

10:30 AM

The Indexing and Interpretation of Zone-Axis SAED Patterns of Amphibole Asbestos Minerals for the Airborne Asbestos Analysis by Transmission Electron Microscopy

Shu-Chun Su, National Voluntary Laboratory Accreditation Program, Washington, D.C., USA

11:00 AM

Statistical Variability of the CARB (Modified AHERA) TEM Method

Frank Raviola, Micro Analytical Laboratories, Inc., Emeryville, CA, USA

11:30 AM

The Usefulness and Limitation of Quantitative EDS in Asbestos Analysis

Robyn Ray, EMSL Analytical, Inc., Cinnaminson, NJ, USA

12:00 PM

Characterizing the NVLAP Proficiency Testing Samples: An Academic Perspective

Bo Li, Delaware Institute of Microscopy and Material Characterization (DRIMMC), Newark, DE, USA

12:20 PM

LUNCH (on your own)

SESSION 8: LITIGATION AND SCIENCE

(Moderated by Alan Segrave and Steve Compton)

1:50 PM

Litigation and Science – The Plaintiffs' Perspective

Jessica Dean, Dean Omar Branham Shirley, LLP, Dallas, TX, USA

2:10 PM

EPA Enforcement of Asbestos Violations

Peggy Forney, Retired, Environmental Protection Agency, National Enforcement Investigations Center, Lakewood, CO, USA

2:30 PM

The Intersection of Law and Science, Causation

Conrad Metcalf, Simmons Hanly Conroy, Attorneys, Alton, IL, USA

SESSION 9: OTHER POTENTIALLY HAZARDOUS PARTICLES

(Moderated by Frank Ehrenfeld and Martin Harper)

2:50 PM

Occupational Exposure to Nano-Engineered Silver in Paint

Len Burrelli¹ and Andreas Saldivar²

¹EPI, Columbia, MD, USA; ²AMA Analytical Services, Inc., Lanham, MD, USA

3:10 PM

BREAK

3:30 PM

Airborne Glass Fiber Separation with Aerodynamic Aerosol Classifier and Multi-Cyclone Sampling Array

Taekhee Lee, Rachel Walker, Teresa Barone and Steven Mischler, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Pittsburgh, PA, USA

3:50 PM

TEM/EDXA Analytical Challenges for Nano-Engineered Paint

Andreas Saldivar¹ and Leonard Burrelli²

¹AMA Analytical Services, Inc., Lanham, MD, USA; ²Environmental Profiles Inc., Columbia, MD, USA

4:10 PM

Comparison of Air Monitoring Methods for Measuring Exposure to Elongate Mineral Particles

Steven Mischler, Taekhee Lee, Rachel Walker, Elizabeth Ashley and Susan Wacaster, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Pittsburgh, PA, USA

4:40 PM

Closing Presentation: Why are We Here? The Future

James Webber, Webber Environmental Health Consulting LLC, Bend, OR, USA

5:00 PM

CONFERENCE ADJOURNS

Posters

Methods Comparison for Determination of Particle Size Distribution of Asbestos Fibers with Field Emission Scanning Electron Microscopy

Rachel Walker, Taekhee Lee and Steven Mischler, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Pittsburgh, PA, USA

Evaluating the Effect of Milling on the Crystallinity of Elongate Mineral Particles

Taekhee Lee and Elizabeth Ashley, CDC/NIOSH/PMRD, Pittsburgh, PA, USA