



Symposium on Developing Consensus Standards for Measuring Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation

Sponsored by ASTM Committee D22 on air Quality

April 30 - May 1, 2015
Marriott Anaheim
Anaheim, CA

Symposium Co-Chairmen: John Sebroski
 Bayer MaterialSciences, LLC
 Pittsburgh, PA, USA

 Mark Mason
 US EPA
 Research Triangle Park, NC USA

ABOUT THE SYMPOSIUM

Standardized methods are needed to assess the potential impacts of SPF insulation products on indoor air quality and to establish re-entry or re-occupancy times after product installation in a building and post-occupancy ventilation needs. The objective of the symposium is to provide a forum for the exchange of ideas from SPF manufacturers, regulatory agencies, indoor air quality professionals, testing labs, air quality consultants, instrument vendors, and other stakeholders. Following the presentations on the current status of measuring emissions from SPF insulation, participants will discuss paths forward for research, method development, and development of standards.

The collaboration and exchange of information at the symposium will be valuable towards the development of standards at ASTM D22.05 on Indoor Air. The subcommittee recently developed D7859 to standardize spraying, sample preparation, packaging and specimen preparation of SPF insulation. Currently, standards are being developed for estimating emissions of semi-volatile and volatile organic compounds (e.g. blowing agents, catalysts and flame retardants) with micro-scale chambers followed by analysis with thermal desorption GC/MS. Specialized chambers are also being evaluated for measuring methylene diphenyl diisocyanate (MDI) emissions. The symposium will be informative towards future development of standards for measuring emissions from SPF insulation.

THURSDAY, APRIL 30, 2015

8:00 AM

Opening Remarks

Al Hodgson, Subcommittee D22.05 Chair

8:05 AM

Introduction, Need for ASTM Standards to Measure SPF Emissions

Mark Mason, Symposium Co-chair

8:15 AM

Introduction, Current ASTM Standards and Work Items on SPF Emissions

John Sebroski, Symposium Co-chair

Session 1: Chamber Studies

Session Chairs: Xiaoyu Liu, Kurt Thaxton

8:25 AM

Evaluation of Micro-Scale Chambers for Measuring Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation

J. R. Sebroski, J. Miller, C. P. Thompson and E. Roeske, CPI and Bayer MaterialScience LLC
Pittsburgh, PA, USA

8:45 AM

Comparison of Fully Automated, On-line Micro-Scale Chamber Emission Measurements to Direct Desorption Emission Methods for Measuring Emissions of Spray Polyurethane Foam (SPF) Insulation

K. Thaxton, Y. Nie and E. Kline-Benne, GERSTEL Inc., Mülheim, Germany

9:05 AM

VOC Analysis of 2 Commercially Available Spray Foam Products

P. Duffy, Icynene Inc., Mississauga, ON, Canada

9:25 AM

Quality Control and Validation of Sampling and Analytical Techniques for the Analysis of Chemical Emissions from Spray Polyurethane Foam (SPF) Insulation

C. Widdowson, Markes International, Llantrisant, RTC, United Kingdom

9:45AM

BREAK

10:15 AM

Flame Retardant Emissions from Spray Polyurethane Foam Insulation

D. Poppendieck, A. Connor and A. Persily, National Institute of Standards and Technology,
Bethesda, MD, USA

10:35 AM

Development of Methods to Characterize Emissions from Spray Polyurethane Foam Insulation

M. Mason, X. Lui, K. Krebs and D. Greenwell, US EPA, Durham, NC, USA; C. Bevington, US EPA, Washington, DC, USA; N. Roache, G. Folk and M. Allen, ARCADIS, Durham, NC, USA; and G. Skarping, M. Dalene and D. Karlsson, Insititutet För Kemisk Analys Norden, AB, Hässleholm, Sweden

10:55 AM

Glass Chamber Method for Screening of MDI and TCPP Emissions from Foam Joint

D. Won, G. Nong and E. Luszyk, National Research Council of Canada, Ottawa, ON, Canada; and A. Zidek, Existing Substances Risk Assessment Bureau of Health, Canada, Ottawa, ON, Canada

11:15 AM Session 1 Discussion, Q&A

12:00 PM **LUNCH (On Your Own)**

Session 2: Field Investigation Studies

Session 2 Chairs: Elizabeth Hugel and Daniel Karlsson

1:30 PM

Ventilation and Re-Occupancy of a Residential Home Sprayed with High Pressure Polyurethane Foam

J. L. Andersen, BASF, Minneapolis, MN, USA

1:50 PM

A Study Evaluating Chemical Emissions from Closed Cell Spray Polyurethane Foam - A Comparison of Airborne SPF Chemical Concentrations in a Home versus Predicted Values from Micro-Scale Chamber Emission Studies

S. Ecoff, Bayer MaterialScience LLC, Pittsburgh, PA, USA

2:10 PM

Quantification of VOCs in Off Ratio Spray Foam

P. Duffy, Icyne Inc., Mississauga, ON, Canada

2:30 PM

Computer Simulation of Peak Temperatures in Spray Polyurethane Foam Used in Residential Insulation Applications

R. S. Duncan, Spray Polyurethane Foam Alliance, Fairfax, VA, USA

2:50 PM **Session 2 Discussion, Q&A**

3:45 PM **BREAK**

4:15 PM **Conclude Day 1 Sessions**

5:00 PM **Reception (Hosted) [Grand Ballroom Salons A-C Lobby Level]**

FRIDAY, MAY 1, 2015

8:00 AM

Greetings

Session 3: Sampling and Analysis

Session Chairs: Dustin Poppendieck and Nicola Watson

8:05 AM

Assessment and Remediation of Misapplied Spray Polyurethane Foam Insulation

E. Light, Building Dynamics, LLC, Ashton, MD, USA

8:25 AM

Sampling of Airborne Isocyanates

M. Dalene, D. Karlsson and G. Skarping Stockholm University, Hässleholm, Sweden; and
D. Gylestam, Insititutet För Kemisk Analys Norden, AB, Hässleholm, Sweden

8:45 AM

Sampling of Airborne Amines and Alkanolamines

D. Karlsson, M. Dalene and G. Skarping, Work Environment Chemistry, Stockholm University,
Hässleholm, Sweden

9:05 AM

**Adaptation of a CIP10 to the Sampling of 4,4'-Methylene Diphenyl Diisocyanate
Aerosols used in Spray Polyurethane Foam Insulation**

S. Aubin, S. Gagné, S. Puscasu, Y. Cloutier and P. Sarazin, IRSST, Montreal, Quebec, Canada;
and H. Van Tra, Universite du Quebec, Montreal, Quebec, Canada

9:25 AM

**Particle Size Fractionated Sampling of Isocyanate Aerosols from Thermal Degradation of
Polyurethane**

G. Skarping, D. Karlsson and M. Dalene, Stockholm University, Hässleholm, Sweden; and D.
Gylestam, Insititutet För Kemisk Analys Norden, AB, Hässleholm, Sweden

9:45 AM **Break**

10:15 AM **Session 3 Discussion, Q&A**

Session 4: Exposure Measurements

Session Chairs: Mary Bogdan and Katherine Sleasman

11:00 AM

**CPI Ventilation Research Project for Estimating Re-Entry Times for Trade Workers
Following Application of Three Generic Spray Polyurethane Foam Formulations**

R. D. Wood, Air Products and Chemicals, Inc., Allentown, PA, USA

11:20 AM

Predicting SVOC Emissions and Indoor Concentration from Spray Polyurethane Foam Using USEPA i-SVOC Software: Parameter Estimation and Results Interpretation

S. Tian, J. Sebroski and S. Ecoff, Bayer MaterialScience LLC, Pittsburgh, PA, USA

11:40 AM

An Approach to Quantifying Exposures from Emissions of Spray Polyurethane Foam Insulation in Indoor Environments

C. Bevington, E. Wong and K. Sleasman, EPA, Washington, DC, USA; and Z. Guo, T. Hong and H. Hubbard, ICF International, Durham, NC, USA

12:00 PM **LUNCH (On Your Own)**

1:30 PM

Investigating Exposure Data Needs to Understand Emission Characteristics from Spray Polyurethane Foam (SPF)

K. Sleasman and C. Bevington, EPA, Washington, DC, USA; and M. Biggs, Consumer Product Safety Commission, Bethesda, MD, USA

1:50 PM

VOC Emissions from Spray Foam Insulation for Different Application Conditions

D. Won, National Research Council of Canada, Ottawa, ON, Canada

2:10 PM **Session 4 Discussions, Q&A**

2:55 PM **Paths Forward**

3:30 PM **SYMPOSIUM ADJOURNS**