

# **19th Annual Conference of the International Society of Exposure Science 2009**

## **Transforming Exposure Science in the 21st Century**

**Minneapolis, Minnesota, USA  
1-5 November 2009**

**ISBN: 978-1-63439-589-2**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2009) by the International Society of Exposure Science (ISES)  
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact the International Society of Exposure Science (ISES)  
at the address below.

ISES Secretariat  
c/o JSI Research and Training Institute  
44 Farnsworth Street  
Boston MA 02201

Phone: (617) 482-9485  
Fax: (617) 482-0617

[isesmail@jsi.com](mailto:isesmail@jsi.com)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## **Table of Contents**

### **Arranged by Session Number with Title**

Note: Sessions are numbered as follows:

- First letter indicates day (M=Monday, T=Tuesday, W=Wednesday, R=Thursday)
- Text after hyphen indicates session type (SY=symposium, PL=platform, P=poster, IP=interactive poster)
- First digit of the three digit number indicates order of parallel session groupings (100s=first parallel sessions of the day, 200s=second parallel sessions, 300s=third parallel sessions)
- Last digits of the three digit number are unique numbers

For example, M-SY101 is a symposium and is offered during the first set of parallel sessions on Monday.

#### **Monday, November 2, 2009**

M-SY101: Environmental Influences on Epigenetic Processes and Complex Disease .....	5
M-SY102: Exposure Assessment Studies in East Asia Countries.....	9
M-SY103: Methods and Strategies for the Assessment of Consumer Exposure: Discussion on Approaches to Improve Modeling of the Variability of Consumer Behavior .....	13
M-SY104: Enhancing Exposure Assessment for Air Pollution Health Studies: EPA/NERL Cooperative Agreement Program .....	17
M-SY201: Environmental Influences on Epigenetic Processes and Complex Diseases II .....	22
M-SY202: Cookstove Intervention and Indoor Air Pollution Studies in the Developing World – Exposure Assessment and Health Impact - Session A .....	26
M-PL201: Climate, Exposure, and Health.....	31
M-PL202: Exposure Modeling .....	34
M-P001a: Monday: Exposure, Risk, Epidemiology - Theme: Environmental Epidemiology, Tracking, and Linkages .....	37
M-P001b: Monday: Exposure, Risk, Epidemiology - Theme: Air Exposures .....	47
M-P001c: Monday: Exposure, Risk, Epidemiology - Theme: Developing Exposure Science .....	52
M-P001d: Monday: Exposure, Risk, Epidemiology - Theme: Risk Analysis .....	56
M-P001e: Monday: Exposure, Risk, Epidemiology - Theme: Biomonitoring-Exposure .....	64
M-P001f: Monday: Exposure, Risk, Epidemiology - Theme: Biomonitoring-Emerging Research & Methods .....	68
M-SY301: Exposure Modeling for Mobile Populations.....	73
M-SY302: Cookstove Intervention and Indoor Air Pollution Studies in the Developing World – Exposure Assessment and Health Impact - Session B.....	76
M-SY303: From Source to Biomarkers: Linking PBPK with Multimedia Fate and Exposure Models .....	80
M-PL301: Exposure Assessment in Minnesota .....	85
M-PL302: Exposure and Vulnerable Groups .....	89

**Tuesday, November 3, 2009**

T-SY101: Old vs. New Persistent Organic Pollutants (POPs) - Some Exposure Surprises .....	95
T-SY102: Semivolatile Contaminants Indoors: Advances in Environmental Chemistry and Human Exposure Assessment .....	99
T-SY103: Exposures in Aircraft Cabins – ACER-RITE FAA Center of Excellence....	102
T-PL101: Exposure Determinants for Environmental Health Studies .....	106
T-IP101: Dietary Exposure .....	111

**Wednesday, November 4, 2009**

W-SY101: Residential Exposures to Endocrine Disrupting Compounds from Consumer Products and Building Materials: Recent Findings and Future Directions.....	118
W-PL101: Global Exposure Management.....	123
W-SY102: Use of Molecular Tools for Source Identification and Risk Assessment in Water Contaminated by Feces .....	127
W-PL102: Engineered Nanomaterials .....	131
W-PL201: Biological Exposures .....	134
W-SY201: Integrative Exposure Biology and Computational Toxicology for Risk Assessment - Session A .....	138
W-PL202: Microbial Occurrence in the Environment.....	142
W-PL203: Relating Indoor-Outdoor Air .....	145
W-PL301: Occupational Exposure Assessment .....	150
W-SY301: Integrative Exposure Biology and Computational Toxicology for Risk Assessment - Session B .....	154
W-SY302: The Validity and Reliability of Urinary Metabolites as Exposure Biomarkers .....	158
W-PL302: Local and Regional Exposure Issues .....	162
W-IP301: Indoor Air.....	166
W-P001a: Wednesday: Occupational, Water, Pesticides - Theme: Characterizing the Exposure Pathway.....	172
W-P001b: Wednesday: Occupational, Water, Pesticides - Theme: Case Studies .....	186
W-P001c: Wednesday: Occupational, Water, Pesticides - Theme: Strategies for Exposure Assessments .....	202

**Thursday, November 5, 2009**

R-P001a: Thursday: Air - Theme: Methods .....	208
R-P001b: Thursday: Air - Theme: Exposure Modeling .....	211
R-P001c: Thursday: Air - Theme: Exposure Issues .....	215
R-P001d: Thursday: Air - Theme: Personal Exposure .....	221
R-P001e: Thursday: Air - Theme: Indoor Exposures .....	225
R-P001f: Thursday: Air - Theme: Indoor/Outdoor Exposures .....	229
R-P001g: Thursday: Air - Theme: Remote Sensing .....	232
R-P001h: Thursday: Air - Theme: Outdoor Exposures .....	234
R-SY101: Biomonitoring and CDC Environmental Public Health Tracking.....	245
R-SY102: Community Engagement to Facilitate Exposure Assessment and Environmental Health Research .....	249
R-SY103: Emerging Methods for Comprehensive Measurement of Personal Exposures: Discussion of Emerging Issues in Applying Measures for Exposure, Diet, Physical	

Activity, Stress and Biological Response in the NIH Genes, Environment, and Health Initiative .....	253
R-SY104: Biomarkers and Other Measures of Exposure as Tools to Evaluate Exposure of Humans to Pathogens.....	258
R-IP101: Exposure Science for Prioritizing and Evaluating Chemicals .....	261
R-SY201: Approaches to Interpreting Biomonitoring Data from Population-level Studies .....	267
R-PL201: Time-Activity Patterns .....	271
R-SY202: Demonstrations of Emerging Methods for Comprehensive Measurement of Personal Exposures Including Diet, Physical Activity, Stress and Biological Response in the NIH Genes, Environment, and Health Initiative.....	275
R-PL202: Phthalates and Flame Retardants .....	279
R-IP201: Measuring, Modeling, and Managing Urban Air Contaminants.....	283