A LEADERSHIP SUMMIT

FURNITURE FLAMMABILITY AND HUMAN HEALTH

Presented by Underwriters Laboratories Inc. jointly with Emory University Rollins School of Public Health

December 13th – 14th, 2017
Emory University Conference Center Hotel | Atlanta, GA
A Leadership Summit Addressing Flame Retardants, Human Health, and Product Flammability

On behalf of Underwriters Laboratories Inc. (UL) and our Not-for-Profit Safety Science Initiatives, we and our research partners would like to extend a warm welcome to everyone joining us in Atlanta for the third annual Furniture Flammability and Human Health Leadership Summit.

Ongoing research, events, communication and policy updates regarding the safety and health impacts of flame retardants in upholstered furniture have elevated the issues of effectively managing the coinciding risks of chemical exposure and product flammability. While these issues impact upholstered furniture, they also expand to diverse product categories including consumer electronics, insulations, construction materials, home décor (rugs, paint, and non-upholstered furniture) and children specific products. While the public’s awareness of chemicals in our everyday products and the expectation of safe products are increasing, this discussion platform is critical for bringing sound scientific practices and professional expertise as we work together to enhance the safety of consumer products.

To further understand pathways for the safety convergence of flammability protection and the prevention of hazardous chemical exposures, UL partnered with Emory University Rollins School of Public Health and industry leaders to conduct chemical exposure and flammability research on upholstered furniture. Our goal for this Summit is to bring stakeholders together to review the latest science and policy updates on this topic, including the UL research results; enable an open, honest and respectful dialogue among key stakeholders; and further develop the pathway to chemical and fire-safe products.

Key objectives of this year’s summit include:

- Review most current fire statistics of injuries and deaths in the US and EU.
- Establish most current knowledge of acute and chronic health impacts of flame retardants used in furniture and consumer products, as related to child and general consumer exposure.
- Review the latest research on chemical exposure risks to firefighters and potential links to flame retardants, other chemicals and byproducts for combustion.
- Establish an understanding of most current flammability codes and safety standards for upholstered furniture and how they are addressing flame retardants, chemical exposure, and fire characteristics.

Welcome | Furniture Flammability and Human Health
- Review fire characteristics of products and their impact on building fires and emerging needs for performance verification.
- Review the latest research and development in flame retardant chemistries and the feasibility of alternative technologies and safer chemicals with consideration of applications to components, finished products, and manufacturing processes.
- Identify pathways in research, product development, manufacturing and verification processes for converging the fire and chemical safety requirements of furniture of today’s market.

We applaud your willingness to join us in seeking safe living, working and learning environments.

Dr. Marilyn Black  
VP & Senior Technical Advisor  
For more information, please contact:  
Underwriters Laboratories Inc. Chemical Safety Research  
2211 Newmarket Parkway, Suite 106  
Marietta, Georgia 30067  
Marilyn.Black@ul.com
Furniture Flammability and Human Health
Steering Committee

We would also like to thank our initial research and summit steering committee members for their continuing support and advisement throughout this journey. Those include:

Lorrie C. Backer, PhD, MPH, Centers for Disease Control and Prevention
Marilyn Black, PhD, LEED AP, Underwriters Laboratories Inc.
Christine Branche, PhD, Centers for Disease Control and Prevention
Thomas Chapin, PhD, Underwriters Laboratories Inc.
Lawrence A. McKenna Jr., PhD, PE, PMP, US Fire Administration
Judith Qualters, PhD, Centers for Disease Control and Prevention
August Schaefer, Underwriters Laboratories Inc., Retired
Andreas Sjodin, PhD, Centers for Disease Control and Prevention
Christopher P. Weis, PhD, DABT, National Institute of Environmental Health Science
# Furniture Flammability and Human Health Agenda

Please Note: All times are approximate and all sessions and speakers are subject to change.

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<th><strong>Tuesday, December 12th</strong></th>
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<td><strong>6:00 pm to 8:00 pm</strong></td>
<td>Registration and Reception</td>
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<th><strong>Wednesday, December 13th</strong></th>
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<tr>
<td><strong>7:45 am to 8:00 am</strong></td>
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| **8:00 am to 8:30 am**      | Marty Ahrens, MSW, National Fire Protection Association  
*Current Fire and Flammability Statistics* |
| **8:30 am to 9:00 am**      | Robert Luedeka, Polyurethane Foam Association  
*Reviewing the National Fire Incident Reporting System and the National Fire Protection Association's Upholstered Furniture Fire Statistic* |
| **9:00 am to 9:30 am**      | Dwayne Sloan, UL LLC  
*Current US Fire Codes and Standards* |
| **9:30 am to 10:00 am**     | Said Nurbakhsh, PhD, Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation  
*California TB 117-2013 Update* |
| **10:00 am to 10:15 am**   | Break |
| **10:15 am to 10:45 am**   | Karolina Storesund, MS, Research Institute of Sweden (RISE) Fire Research  
*EU Fire Standards and Research* |
| **10:45 am to 11:15 am**   | Christopher Weis, PhD, DABT, National Institute of Environmental Health Sciences  
*Scientific and Regulatory Status of Flame Retardants and Similar Chemicals* |
| **11:15 am to 11:45 am**   | Heather Stapleton, PhD, Duke University  
*Relationships Between Flame Retardants uses in Furniture and Residential Exposure* |
| **11:45 am to 12:15 pm**   | Courtney Carignan, PhD, Michigan State University  
*Flame Retardants and Fertility* |
| **12:15 pm to 1:15 pm**    | Lunch |
| **1:15 pm to 1:45 pm**     | Patrick Morrison, International Association of Firefighters  
*Hazardous Exposures and Cancer Risks Concerning Firefighters* |
| **1:45 pm to 2:15 pm**     | Kenneth Fent, PhD, CIH, National Institute for Occupational Safety and Health  
*Flame Retardant Exposures in the Fire Service* |

Meeting Agenda | Furniture Flammability and Human Health
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<td>2:15 pm to 2:30 pm</td>
<td>Break</td>
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<td>2:30 pm to 3:00 pm</td>
<td>Gavin Horn, PhD, Illinois Fire Service Institute</td>
<td>Fireground Chemical Exposure and Protection</td>
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<td>3:00 pm to 3:30 pm</td>
<td>Gordon Nelson, Ph.D, Florida Institute of Technology</td>
<td>Flame Retardant Technology Advancements</td>
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<td>3:30 pm to 4:00 pm</td>
<td>Munjal Patel, MS, ICL</td>
<td>Flame Retardant Innovations</td>
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<td>4:00 pm to 5:00 pm</td>
<td>Panel 1 – Flammability and Chemical Performance</td>
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<td>Moderator:</td>
<td>Steve Kerber, MS, Underwriters Laboratories Inc.</td>
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<td>Panelists:</td>
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<td>1. Marty Ahrens, MSW, National Fire Protection Association</td>
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<td>4. Gordon Nelson, PhD, Florida Institute of Technology</td>
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<td>6:30 pm to 8:30 pm</td>
<td>Networking Dinner</td>
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| 8:00 am to 8:30 am | Susan Inglis, Sustainable Furnishings Council  
                           Jillian Cooke, Wellness Within Your Walls  
                           *Consumer and Industry Perspectives* |
| 8:30 am to 9:15 am | Andrew Lock, PhD, Consumer Product Safety Commission  
                           *Update on Upholstered Furniture Flammability at CPSC* |
| 9:15 am to 9:45 am | Mauro Zammarano, PhD, National Institute of Standards and Technology  
                           *Bench-Scale Testing of Residential Upholstered Furniture: Flaming and Smoldering Combustion* |
| 9:45 am to 10:15 am | William Pitts, PhD, National Institute of Standards and Technology  
                           *Real-Scale Mock-up Flammability Testing (Effect of Fire Barriers, etc)* |
| 10:15 am to 10:30 am | Break                                                                 |
| 10:30 am to 11:00 am | Said Nurbakhsh, PhD, Bureau of Electronic and Appliance Repair,  
                           Home Furnishings and Thermal Insulation  
                           *Update on Barrier Studies* |
| 11:00 am to 12:30 pm | UL/Emory Research Processes on Furniture Flammability and Human Health  
                           1. Debra Harris, PhD, RAD Consultants  
                           2. Aika Davis, PhD, Underwriters Laboratories Inc.  
                           3. Jordan Cohen, MPH, Emory University, Rollins School of Public Health  
                           4. Stephen Kerber, MS, Underwriters Laboratories Inc. |
| 12:30 pm to 1:30 pm | Lunch                                                                  |
| 1:30 pm to 3:00 pm | UL/Emory Research Results on Furniture Flammability and Human Health  
                           1. Barry Ryan, PhD, MS, Emory University, Rollins School of Public Health  
                           2. Marilyn Black, PhD, Underwriters Laboratories Inc.  
                           3. Pravinra Gandhi, PhD, PE, UL LLC  
                           4. Stephen Kerber, MS, Underwriters Laboratories Inc. |
| 3:00 pm to 3:15 pm | Break                                                                  |
| 3:15 pm to 4:00 pm | Panel 2 – Pathway to Fire and Chemical Safe Products  
                           Moderator:  
                           Marilyn Black, PhD, LEED AP, Underwriters Laboratories Inc.  
                           Panelists:  
                           1. Nonnie Preuss, Wellness Within Your Walls  
                           2. Mauro Zammarano, PhD, National Institute of Standards and Technology  
                           3. Joel Tenney, ICL Industrial Products  
                           4. Susan Inglis, Sustainable Furnishings Council |
| 4:00 pm          | Adjourn                                                                |
Furniture Flammability and Human Health Speakers

Please Note: All times are approximate and all sessions and speakers are subject to change.

Dr. Marilyn Black is currently Vice President, Sr. Technical Advisor, and Fellow of Underwriters Laboratories Inc. She is the founder and former chairperson for both UL Air Quality Sciences, a leading testing and research organization focused on chemical and biological air pollution and the GREENGUARD Environmental Institute, which provides a third-party indoor air quality certification program for building materials, electronics, and furnishings. Dr. Black is a leader in the study of low dose chemical exposure on human health, and in finding ways to reduce that exposure. She is an active participant in national and international scientific organizational initiatives, research projects and community outreach programs. She has presented and published over 200 papers on indoor air quality and environmental exposure with a special interest in children's health, and was recently awarded the prestigious national Keystone Center Leadership in Environment Award. Dr. Black received a Ph.D. from the Georgia Institute of Technology, M.S. from the University of Florida, and B.S. from the University of Virginia. She is the founder of the Khaos Foundation, forwarding a mission of research and education for the betterment of children's health and well-being.

Dr. Aika Davis is a Research Scientist in the Chemical Safety Research group at Underwriters Laboratories Inc. Her research focuses on chemical exposures and human health. Recent projects have been on particle and chemical emissions from consumer products and technologies. She received her Ph.D. in Environmental Engineering from Georgia Institute of Technology

Dr. Debra Harris is a leading expert in evidence-based design, with award-winning research, product, and facility designs. She is internationally recognized for research in building performance and occupant outcomes for indoor environments. As CEO of RAD Consultants, she focuses on evidence-based strategic planning, programming, and independent research. Her Ph.D. in Architecture is from Texas A&M University, with an emphasis on health systems planning; and she is a Fellow of the Center for Health Systems & Design at Texas A&M University. Debra has written over 40 peer-reviewed and trade publications, books, and book chapters; and presented to industry professionals on issues significant to the quality of the indoor environment.

Speakers | Furniture Flammability and Human Health

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environment. Debra specializes in assimilating research into evidence-based strategies for facility design. Her research focuses on factors affecting user experience and outcomes, especially related to health, productivity, safety, and cost implications of the physical environment.

Dr. Barry Ryan is currently a Professor in Exposure Science and Environmental Chemistry in the Department of Environmental Health at the Rollins School of Public Health of Emory University. He holds a Ph.D. in Chemistry from Wesleyan University in Middletown, Connecticut. His work focuses on multimedia environmental exposure assessment and the impact of such exposures on health. He began this work over 30 years ago with work focusing on air pollution exposures, but soon came to the conclusion that even exposures that are dominated by the air inhalation route can have significant non-inhalation-related pathways. Since the early 1990s, he has investigated multimedia exposure to metals, polynuclear aromatic hydrocarbons, pesticides, perfluorooctanoic acid, and more recently historical and current-use flame retardants, plasticizers, and other endocrine disrupting compounds. In his studies, they gather environmental and biological samples in the field, return samples to our laboratories for analysis, and work up the resulting data using sophisticated statistical methods. Ultimately, the exposures determined are combined with health-related data to suggest correlations of these outcomes with the exposures experienced. Our research group maintains a busy and effective analytical chemistry laboratory now taking advantage of Emory's Rollins School of Public Health's Laboratory for Exposure Assessment and Development in Environmental Research (LEADER). Along with co-directing this research laboratory with Dr. Dana Boyd Barr, he has served as Director of Laboratories for Rollins School of Public Health for the last 15 years. In both these capacities, he has developed strong skills in research and laboratory management that can be brought to bear in the complicated targeted analysis centers. He has developed extensive skills in laboratory data management, quality assurance, and quality control procedures, and in personnel management. His work for the EPA and NIEHS over the last 25 years has impressed upon me the need for detailed work protocols, management of laboratory sample and data flow, as well as data analytic skills. These coupled with an understanding of chemistry and the fate and transport of chemical compounds in the environment have helped me improve understanding of the role environmental contamination plays in human health.
Jordan Cohen began working at LEADER, as an MPH student, on various projects with Dr. Ronald Hunter, now at the CDC, before choosing to work with Dr. Barr on PBDEs for his thesis. After graduating, he was hired by Dr. Ryan as the Research Project Coordinator for an air quality study at the DeKalb Peachtree Airport in Chamblee, GA. The goal of the study is to collect and analyze air samples for a variety of pollutants, such as heavy metals, NO2, VOCs, PM, black carbon, and noise in order to better understand the impact that the airport has on the surrounding neighborhoods. This study was initiated by a committee of community members in conjunction with the airport as a response to proposed expansion efforts. This study has been underway since 2013, and while data collection has been finished since October of 2014, we are currently analyzing the data. Hundreds of samples were collected and each analyzed using different methods on different instruments in the lab. We use the GC-MS, UV-VIS spectrophotometer, and ICP-MS in the lab, as well as environmental particle counters and noise monitors in the field. Jordan splits his time between the field and lab, as he is responsible for preparing and deploying samplers, as well as collecting and analyzing them. In addition to collecting and analyzing samples, he manages the data, including noise data, which provides insight into how the size of a plane contributes to its loudness. While the study is well underway, there is much to be done before we see the full picture, and there will likely be some thesis data available for those who are interested in the work that is being done on this study. Jordan is currently the senior public health program associate of a new study, involving the testing of various types of furniture and electronics for flame retardants (FR), as well as SVOCs, and he is responsible for the development, collection, and analysis of the sampling apparatuses and data used in this study. This study aims to quantify the exposure to FRs and VOCs via inhalation and dermal contact from common household and workplace settings. This study is being done with the collaboration of Underwriters Laboratory, a company that conducts safety testing and analysis of products used in the manufacturing industry, as well as Georgia Tech and the Consumer Product Safety Commission.

Steve Kerber is the Director of the UL Firefighter Safety Research Institute. He has led research with the fire service in the areas of ventilation, structural collapse, and fire dynamics. A 13-year veteran of the fire service, with most of his service at the College Park Fire Department in Prince George’s County Maryland where he served at ranks up through Deputy Chief. He received his bachelor's and master's degrees in fire protection engineering from the University of Maryland and is currently working on his doctorate at Lund University in Sweden. Steve is on the Society of Fire Protection Engineers Board of Directors and the University of
Maryland Fire Protection Engineering Department Board of Visitors. He has also been appointed to the rank of Honorary Battalion Chief by the FDNY and was named the 2014 ISFSI and Fire Engineering George D. Post Instructor of the Year.

Dr. Pravinray Gandhi (Ph. D., Mechanical Engineering) has been at UL since 1984. He is currently the Director of R&D with focus on fire safety and leads research teams to support the development of UL standards as well as manage contract research. Dr. Gandhi has worked to quantify fire hazards, develop test methods and collaborated with standards organizations (ASTM, NFPA, UL, ISO, IEC) to develop performance-based standards. He has also supported UL’s global safety mission through collaborative research and engagements with academic institutions, and government agencies. Dr. Gandhi has been recognized for his contributions to advancing fire science and engineering into practice and is a William Henry Merrill Corporate Fellow.

Marty Ahrens, Senior Manager in the National Fire Protection Association’s (NFPA’s) Data and Analytics Group, came to NFPA in 1997 after 11 years as the Research Analyst/Fire Incident Reporting System Coordinator in the Massachusetts State Marshal’s office. In addition to her managerial responsibilities, she is also actively involved in fire data analysis. She is the author of reports on home structure fires, characteristics of home fire victims, smoke alarms in US home fires, upholstered furniture, and many others. Marty has an MSW from Boston University and a BA in Psychology from the University of Connecticut.

Bob Luedeka received a Bachelor of Science degree in Business Administration from the University of Denver. For more than 40 years, Luedeka has been involved in the flexible polyurethane foam industry. In 2004, Luedeka was appointed Executive Director of the Polyurethane Foam Association. Luedeka was responsible for coordinating collaborative efforts to create the CertiPUR-US® voluntary physical testing, content analysis, and emissions testing procedures for flexible polyurethane foam. Bob Luedeka served as the first Executive Director of the Alliance for Flexible Polyurethane Foam, Inc., the governing organization for the CertiPUR-US® program and he currently serves on its board of directors. He is also a member of the U.S. Environmental Protection Agency EcoLabel Pilot Program task group and is a member of third-party testing and codes development committees including NFPA Fire Tests Technical Committee, UL Canada S131 Technical Committee, and various ASTM International Flammability Testing Committees. He serves on the board of directors for the Fire Prevention Alliance, a 501(c)(3) corporation.
The Fire Prevention Alliance commissioned and funded the research that Bob will summarize today.

**Dwayne Sloan** is the Director of Principal Engineers and Regulatory Services for Building & Life Safety Technologies at UL LLC. In addition to overseeing the activities of Principal Engineers and Regulatory staff for the Division, Dwayne is responsible for several Reaction to Fire certification areas and UL Standards. He serves on several NFPA technical committees, including the Fire Test Committee and the Committee on Interior Finish and Content (NFPA 101 & NFPA 5000). He also participates heavily in various ASTM committees and is the second Vice President of ASTM E05, Committee on Fire Standards. Dwayne is the author of several articles and presentations and has a Mechanical Engineering degree from North Carolina State University in Raleigh, North Carolina. Dwayne was recently recognized by UL as a Corporate Fellow within the William Henry Merril Society, named in honor of UL’s founder.

**Dr. Said Nurbakhsh** has been with the California Bureau of Electronic & Appliance Repair, Home Furnishings and Thermal Insulation (Department of Consumer Affairs) since May 1989 as its Flammability Research Test Engineer. During that time, he headed the research and development of flammability standards such as Technical Bulletin 133, 129, 603 and 604 and multiple revisions of Technical Bulletin 117, the current Technical Bulletin 117-2013, TB 117-2013 open-flame barrier study as well as running the full-scale fire testing facility at the Bureau. He has also lead and conducted other flammability related research and studies. He was instrumental in the designing of the flammability testing laboratories for the Bureau’s new facility. He has authored or co-authored numerous technical papers and reports on furniture and bedding flammability and has made presentations at numerous conferences and meetings. Said has a Ph.D. degree in Mechanical Engineering in the field of combustion of solid fuels.

**Karolina Storesund** is a researcher at RISE Fire Research in Norway and holds a Master's degree in Textiles from the University of Leeds, UK. She has been working at RISE Fire Research for eight years, with research on a broad spectrum of topics, including fire properties of textiles and furniture, fire safety for vulnerable people and organizational aspects with the fire service. She is particularly interested in issues related to fire safety and sustainability.
**Dr. Christopher Weis** serves as Science Advisor and Toxicology Liaison for the Director of the National Institute for Environmental Health Science (NIEHS) in Bethesda, Maryland where he represents NIEHS and the National Toxicology Program (NTP) on national and international committees, task forces, and ad hoc working groups. Prior to joining NIEHS in August 2010, Chris served for nine years as the forensic toxicologist for the National Enforcement Investigations Center (NEIC) in Denver, Colorado. Chris completed his Ph.D. in medical physiology and toxicology at Michigan State University in 1987 and served his postdoctoral fellowship at the University of Virginia School of Medicine, Department of Physiology and Biophysics.

**Dr. Heather Stapleton** is an environmental chemist and exposure scientist at the Nicholas School of the Environment at Duke University. She currently serves as Deputy Director for the Duke Superfund Research Center, and co-Director of the Ph.D. program in Environmental Health at Duke. Her current research projects focus on identifying flame retardant chemicals in consumer products, exploring routes of human exposure and examining mechanisms of thyroid hormone dysregulation. In 2012 she testified in front of the US Senate Environment & Public Works committee on human exposure and toxicity of new-use flame retardants.

**Dr. Courtney Carignan** is an environmental exposure scientist and epidemiologist whose research helps protect reproductive and child health by investigating exposure to mixtures of ingredients and contaminants in consumer products, drinking water and food from preconception through puberty. Her recent work indicates that exposure to mixtures of replacement flame retardants can have adverse effects on fertility and that sources of exposure include the office and gym environments. She has conducted biomonitoring and health studies for a wide range of populations including infertile couples, new mothers, office workers, gymasts, and communities exposed to contaminated drinking water. She holds a Ph.D. from the Boston University School of Public Health, completed postdoctoral training at Dartmouth College and the Harvard T.H. Chan School of Public Health, and is currently an Assistant Professor at Michigan State University. Prior to pursuing graduate training, she conducted risk assessments and response actions for contaminated sites.
Patrick Morrison is the Assistant to the International Association of Fire Fighters (IAFF) General President for the Division of Occupational Health, Safety and Medicine. He is responsible for the daily operations of the Division as well as the development and implementation of fire service occupational health and safety standards, including those promulgated by federal, state and provincial governments, including crucial health and safety issues published by National Fire Protection Association, National Institute for Occupational Safety and Health and IAFF Wellness Fitness Labor/Management Task Force. Prior to joining the IAFF, Mr. Morrison was a career firefighter for 21 years with the Fairfax County Fire and Rescue Department in Fairfax, Virginia.

Dr. Kenneth Fent obtained his MS and Ph.D. in Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill. Dr. Fent joined NIOSH in 2008, where he currently works as a research industrial hygienist. He is also a Commander in the U.S. Public Health Service, where he is a member of a rapid deployment team and has responded to numerous emergency events, including the Ebola response in West Africa. Much of his research has focused on assessing dermal and inhalation exposures to combustion byproducts in firefighters. Currently, Dr. Fent is involved in a comprehensive study of cardiovascular and carcinogenic risks during modern firefighting (in collaboration with the Illinois Fire Service Institute and the UL Fire Safety Research Institute), a study investigating the effects of repeatedly laundering turnout gear on the protective properties of the gear (also in collaboration with IFSI and UL FSRI), and a prospective firefighter cancer cohort study (in collaboration with the Universities of Arizona and Miami). Dr. Fent also serves on the NFFF Fire Service Occupational Cancer Alliance, NIOSH Public Safety Sector committee, two technical advisory committees for the NFPA Fire Protection Research Foundation, as a consultant/advisor on several ongoing firefighter research studies, and on the UL FSRI Advisory Board. He has published over 45 technical reports and journal articles and presented his findings nationally and internationally.

Dr. Gavin Horn has served as the Director of IFSI Research since August 2004, immediately after receiving his Ph.D. in Mechanical Engineering from the University of Illinois at Urbana-Champaign. Gavin’s research interests lie in the areas of firefighter health and safety, First Responder technology development, material testing and design, and nondestructive evaluation. Gavin has published over 50 peer-reviewed journal articles and given presentations at professional conferences around the world. He is a member of NFPA’s Technical Committees on Special Operations Clothing & Equipment and Fundamentals of Fire Control within a Structure Utilizing Fire Dynamics, a member of the Board of Trustees for the Fire Protection Research Foundation, and a member of the Speakers | Furniture Flammability and Human Health
Advisory Board for UL’s Firefighter Safety Research Institute. Gavin also serves as a firefighter/engineer with the Savoy (IL) Fire Department.

Dr. Gordon Nelson has been actively involved in committee and standardization work in ASTM, UL, and the International Electrotechnical Commission. Dr. Nelson received the Society of the Plastics Industry Structural Foam Division’s Recognition Award for 1979. The Mississippi Legislature passed a Concurrent Resolution in his honor in 1987. Dr. Nelson was the American Institute of Chemists Members and Fellows Lecturer in 1989 and was the recipient of the Charles Holmes Herty Medal presented by the Georgia Section of the ACS in 1998. Dr. Nelson was named an ACS Fellow in 2015. Dr. Nelson is the editor/co-editor/co-author of 27 books, and author/co-author of 213 chapters/papers, primarily in the areas of nanocomposites, polymer flammability, smoke and toxicity studies. A native of Palo Alto, California, Nelson received his undergraduate degree in Chemistry from the University of Nevada, Reno, in 1965 and his M.S. and Ph.D. from Yale University in 1967 and 1970, respectively. Before joining Florida Tech in 1989, Dr. Nelson was Professor and Chairman of Polymer Science at the University of Southern Mississippi, Vice President of Springborn Laboratories and a manager at GE Plastics.

Munjal Patel is currently the Global Market Support Manager with Israel Chemicals Ltd (ICL), supporting Flame Retardants for Polyurethane applications. Before joining ICL, Munjal worked at Stepan Co., and Urethane Soy Systems Co. Munjal has an extensive background in R&D and product development in polyurethane applications and Epoxy formulations. Munjal earned his Bachelor of Science in Plastics Engineering from Pittsburg State University, Pittsburg, KS and his Masters of Science in Industrial Management from South Dakota State University, Brookings, SD.

Susan Inglis is Executive Director of the Sustainable Furnishings Council, and resident expert with the organization she helped found in 2006. She has led SFC to work with industry leaders to establish criteria to gauge the sustainability of furniture products and practices; develop programs for educating all sectors of the industry; and attract hundreds of companies to membership. Inglis is also founder and owner of From The Mountain, a company that imports handspun cashmere yarn from Afghanistan, providing safe income for over 100 women there. Inglis serves on the Board of the American Sustainable Business Council and is an active member of WithIt, which awarded her the 2009 WOW
Educator Award. She lives in North Carolina and has been named a Visionary Leader by the NC Business Council.

Jillian Pritchard Cooke is the founder of Wellness Within Your Walls, a health and wellness company that aims to connect the global family with healthy, eco-sensitive products that result in sustainable, non-toxic interior environments. To simplify this process for consumers and industry professionals, WWYW certifies People, Places, Programs, and Products. WWYW is working closely with developers, builders, architects, and interior designers around the world to drastically reduce toxins in the interior environment. Presently, WWYW is working on case study homes in all regions of the US, as well as several in the UK and EU. Jillian has authored numerous articles that specifically deal with reducing harmful toxins. She presently serves on the Board of Trustees of the Sustainable Furnishings Council and is chair of the SFC Education Committee. Jillian is a frequent speaker at many global trade associations.

Dr. Andrew Lock, Ph.D. joined the U.S. Consumer Product Safety Commission (CPSC) in 2010 as the Lead Fire Protection Engineer in the Directorate for Laboratory Sciences. Dr. Lock is the Project Manager for the Upholstered Furniture Flammability Project and Technical Lead on CPSC’s Fire Test Operations. Dr. Lock is responsible for supporting a range of fire safety projects, developing test procedures, and maintaining fire testing and instrument operations including the CPSC furniture calorimeter. Prior to joining CPSC, Dr. Lock was a researcher at the National Institute of Standards and Technology (NIST) working on a variety of research projects including firefighter equipment, enclosure fires, fire model validation, and large-scale field experiments.

Dr. Mauro Zamarano is a Materials Science Engineer in the Flammability Reduction Group of the Fire Research Division of the Engineering Laboratory at NIST, USA. His current research interest focus on flammability reduction technologies. He has over 50 publications cited on Scopus. He has been acting as the leader of the flammability reduction group since September 2016.
Dr. William (Bill) Pitts is currently serving as a rehired annuitant Research Chemist in the Fire Research Division at the National Institute of Standards and Technology (NIST). After completion of degrees at the University of Virginia (BS, Chemistry) and the University of California, Los Angles (Ph.D., Physical Chemistry) he completed a two-year National Research Council Postdoctoral Fellowship at the Naval Research Laboratory in Washington DC. In 1981, he was hired by the Center for Fire Research at the National Bureau of Standards (now NIST) in Gaithersburg, MD. During the following thirty-five years he participated in/led numerous projects including efforts related to characterizing turbulent flows, understanding carbon monoxide formation in fires, fire diagnostics, replacement of halons for fighting aircraft fires, investigation of the World Trade Center disaster, and flammability of residential upholstered furniture. During his tenure he served as a group leader for over ten years, published over fifty manuscripts, and was awarded Department of Commerce Bronze, Silver and Gold Metals for research excellence. After a thirty-five year career, Dr. Pitts retired from Federal service in 2016, returning to his current position later the same year.

Nonnie Preuss, originally from New Orleans, LA. is executive director of Wellness Within Your Walls, a health and wellness company that aims to connect professions with healthy, eco-sensitive products that result in sustainable, non-toxic interior environments. A graduate of Vanderbilt University, she has devoted her career to architectural, green building, and design pursuits. As executive director of WWYW she oversees all aspects of the educational and consulting programs, understanding where toxins can be found, how they affect human health, and how we can avoid or eliminate them through innovative design and construction practices. Nonnie is a natural born problem solver, and welcome’s the challenges posed by today’s manufacturers seeking to create healthier product for the marketplace. is the Execute Director for Wellness Within Your Walls.

Joel Tenney has over thirty years of experience in the in the chemical industry. He currently serves as the director of advocacy for Israeli Chemicals Industrial Products group in North America. His responsibilities include government relations, value chain outreach and product support for flame retardant chemistries. Mr. Tenney holds a Masters ChE from Georgia Institute of Technology, a BS ChE from Michigan State University and an MBA from Kennesaw State University.