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University of Texas at Austin, Civil, Architectural and Environmental Engineering

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National Research Council of Canada, Ottawa ON, Canada

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Budapest University of Technology and Economics, Building Service Engineering and Process Engineering, Budapest, Hungary

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Eero J. Palomaki, Isto P. Maartola, Ulla-Maija Hellgren, Kari Reijula

Finnish Institute of Occupational Health, Tampere, Finland

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Ian D. Longley, Jennifer Gadd

NIWA Ltd, Auckland, New Zealand

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Karabo Shale, Katleho Mokoena

Central University of Technology, Free State, Bloemfontein, South Africa

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Jane Nkhebenyane, Karabo Shale, Pierre Venter, Ryk Lues

Central University of Technology, Free State, Bloemfontein, South Africa

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Laboratoire Chimie Provence - Equipe Instrumentation et Réactivité Atmosphérique, Marseille

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Ilaria Oberti, Andrea Ratti, Silvia Arrigoni, Pietro Imbrogno

Politecnico di Milano, Milan, Italy

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#### **The effects of indoor air pollution on blood pressure in adult women living in rural China**

Jill Baumgartner, James J. Schauer, Majid Ezzati, Lin Lu, Chun Cheng, Jonathan Patz, Leonelo Bautista

Institute on the Environment, St. Paul MN, United States

Keywords: biomass, solid fuels, indoor air pollution, blood pressure, China

#### **Digital Demand Controlled Ventilation - An Alternative To Static Pressure Controlled**

Mads Mysen, Peter Schild, Finn Drangsholt, Bjørn Tore Larsen

Stiftelsen vekst, OSLO, Norway

Keywords: Demand controlled ventilation, Energy performance, Building controls & automation, Ventilation, Schools

#### **Nicotine In Dust Samples Collected From Children's Bedrooms And Daycare Centers In**

##### **Denmark**

Charles J. Weschler, Sarka Langer, Andreas Fischer, Gabriel Bekö, Jørn Toftum, Geo Clausen

University of Medicine and Dentistry of New Jersey, Piscataway NJ, United States

Keywords: smoking, ETS, cotinine, exposure, changing behaviour

#### **Particle Exposure Mitigation In Cooking Activities Through A Residential Ceiling Hood**

Fausto Arpino, Giorgio Buonanno, Aldo Russi, Luca Stabile

DiMSAT- University of Cassino, Cassino (FR), Italy

Keywords: Exposure (inhalation), Contaminants (ultrafine particles), Air cleaning,

#### **Evaluation of Mold Sanitation Methods**

Lennart Larsson, Mirko Peitzsch, Aime Must, Erica Bloom

Lund University, Department of Laboratory Medicine, Lund, Sweden

Keywords: Mold, mycotoxins, mass spectrometry, building materials, sanitation

#### **Individual Differences In Predicted Thermo-Physiological Responses To Entrapment: Heat**

##### **Stress In A Disabled Submarine Or Similar Enclosed Environment**

Miyo Yokota, Berglund Larry, Wayne Horn

USARIEM, Natick MA, United States

Keywords: Thermoregulatory model, Disabled submarine, Individual variability, Anthropometry, Core temperature

#### **User Satisfaction With Indoor Air Quality In Government Office Buildings Of The U.S.**

Joon-Ho Choi, Vivian Loftness, Azizan Aziz

Missouri University of Science and Technology, Civil, Architectural & Environmental Engineering, Rolla MO, United States

Keywords: Indoor air quality, user satisfaction, post-occupancy evaluation, survey, on-site measurement

#### **Diversity, Seasonal Dynamics And Sources Of Bacteria In House Dust**

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<b>Microbial Toxins In Surface Swab And Dust Samples From School Buildings In Three European Countries.</b> Mirko Peitzsch, Michael Sulyok, Martin Täubel, Vinay Vishwanath, Alicia Borrás, Esmeralda Krop, Asko Vepsäläinen, Jose Jacobs, Jan-Paul Zock, Anne Hyvärinen, Dick Heederik, Aino Nevalainen, Lennart Larsson National Institute for Health and Welfare, Kuopio, Finland Keywords: Schools, Moisture/dampness, Biological, Measurements, Asthma	
<b>Experimental Study Of Ultrafine Particle Penetration For Straight and Double Bend Cracks</b> Alvin Lai City University of Hong Kong, Department of Building and Construction,, Kowloon, Hong Kong Keywords: Penetration, Indoor-Outdoor Relationship, Cracks, Ultrafine Particles	
<b>Quantitative Relationships Between Occupant Satisfaction And Aspects Of Indoor Environmental Quality And Building Design</b> Monika Frontczak, Stefano Schiavon, John Goins, Edward Arens, Hui Zhang, Pawel Wargocki International Centre for Indoor Environment and Energy, DTU Civil Engineering, Kgs. Lyngby, Denmark Keywords: Satisfaction, occupant's responses, office buildings, post-occupancy evaluation	
<b>Comparing CO<sub>2</sub> tracer techniques for estimating ventilation rates in classrooms</b> Richard J. Shaughnessy , Bradley Turk, Demetrios Moschandreas, Ulla Havrinen-Shaughnessy University of Tulsa, Tulsa OK, United States Keywords: schools, indoor environmental quality, buildup, airflow	
<b>Evaluation Of HVAC Operation And Building Conditions By Carbon Dioxide And Dew Point Monitoring</b> David W. Bearg, PE, CIH Life Energy Associates, Concord MA, United States Keywords: Healthy Buildings, Ventilation Performance, Moisture Management, Continuous Commissioning, Infiltration Assessment	
<b>PM<sub>2.5</sub> Air Pollution and Secondhand Smoke in 94 US Casinos</b>	
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<b>Ventilation Rates in Schools in the Southwestern United States</b> Richard Shaughnessy, Ulla Haverinen-Shaughnessy, Demetrios Moschandreas, Eugene Cole University of Tulsa, Tulsa OK, United States Keywords: carbon dioxide, outdoor air, indoor environmental quality, schools, ventilation	
<b>Climate Change, the Indoor Environment and Health: Priority Issues for Action</b> John Spengler Harvard School of Public Health, Environmental Health, Boston MA, United States Keywords: Climate change, health, review,	
<b>Ultrafine Particles: 3 Years of Measurements in the NIST Test House</b> Lance Wallace, Andrew Persily, Cynthia Howard-Reed, Donghyun Rim, Steven Emmerich, Fang Wang, Hoang Chi, Michal Green, Jung-il Choi National Institute of Standards and Technology, Reston VA, United States Keywords: particles, ultrafine particles, coagulation, cooking	
<b>Thermal Comfort and Perceived Air Quality of a PEC System</b> Edward A. Arens, Hui Zhang, Wilmer Pasut, Ashley Warneke, Fred Bauman, Hiroshi Higuchi University of California at Berkeley, Berkeley CA, United States Keywords: Air movement cooling, absence from workstation, body thermal plume,	
<b>Climate Change The Indoor Environment And Health - Priority Issues For Action</b> William W. Nazaroff University of California, Civil and Environmental Engineering, Berkeley CA, United States Keywords: climate change, contaminants, controls and prevention, health and human perceptions	
<b>Nucleation And Growth Of Freshly-formed Particles From Limonene Ozonolysis</b> Chi Hoang, Donghyun Rim, Lance Wallace, Andrew Persily National Institute of Standards and Technology, Building Environment, Gaithersburg MD, United States Keywords: ozone, limonene, nanoparticles, nucleation	
<b>Effects of ozone treatment on fungal growth, chemical components and surface morphological characteristics of wood flooring materials</b> Chi Hoang, Tinh Nguyen, Andrew Persily, Deborah Stanley National Institute of Standards and Technology, Gaithersburg MD, United States Keywords: biology, Decontamination and disinfection	
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<b>Aircraft noise, overheating and poor air quality in London primary schools' classrooms</b> Azadeh Montazami, Fergus Nicole, Mike Wilson London Metropolitan University, London, United Kingdom Keywords: Overheating, High level of background noise, Air quality, Primary schools' classroom, Natural ventilation	
<b>Modeling Exposures to Air Pollutant Mixtures: Application of Copula Methods to the RIOPA Data</b> Chunrong Jia, Stuart A. Batterman, Feng-Chiao Su University of Memphis, Memphis TN, United States Keywords: Volatile organic compound, VOC, mixture, copula, personal exposure	
<b>An Algorithm For Characterizing The Aerodynamic Particle Size Profile Of Bacterium-laden Expiratory Aerosols And Its Validation Using Benign Bacteria</b> Yang Yang, G.N. Sze To, Christopher Y.H. Chao The Hong Kong University of Science and Technology, Department of Mechanical Engineering, Hong Kong, Hong Kong Keywords: Bacterium-laden expiratory aerosols, aerodynamic diameter, infectious respiratory disease, stochastic modeling, Monte Carlo method	
<b>Formulas for Predicting Elementary Students' Thermal Comfort to Improve the Learning Environment in Classrooms</b> Yuki YANAI, Toshiharu IKAGA, Tatsuya Kobayashi Graduated School of Keio University, Yokohama, Japan Keywords: school, thermal sensation, field survey, questionnaire survey, logistic regression analysis	
<b>Ultrafine particle emissions from cigarette smoldering, incense burning and vacuum cleaner motor operation</b> C. L. Wu, G. N. Sze-To, Christopher Y. H. Chao, M. P. Wan The Hong Kong University of Science and Technology, Department of Mechanical Engineering, Hong Kong, Hong Kong Keywords: Ultrafine particles, cigarette smoldering, incense burning, vacuum cleaner, emission rate	
<b>Reducing The Risk Of Heat Stroke During Bathing</b> Yuri Sugimoto, Toshiharu Ikaga, Shingo Hori, Masaru Suzuki Graduate School of Keio University, Yokohama, Kanagawa, Japan Keywords: Healthy homes, building and communities, Thermal, Risk,	

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<b>Extremely Efficient And Clean Cooking/Lighting Device For Rural Households</b> Anil K. Rajvanshi, S.M. Patil, A.M. Ranaware, V.J. Chopade, Noorie Rajvanshi Nimbkar Agricultural Research Institute, Phaltan, India Keywords: Lanstove, life cycle analysis, cooking and lighting, developing countries, Kerosene	
<b>Chemical Concentrations In New California Homes And Garages</b> Peggy L. Jenkins, Ryan D. Johnson, Thomas J. Phillips, Francis J. Offermann CA Air Resources Board, Research Division, Sacramento CA, United States Keywords: Volatile organic chemicals, Reference Exposure Levels, California Proposition 65,	
<b>The Influence Of The Ventilation On Performance, Physiological Response And Occupant's Perception</b> Takaki Hibino, Go Iwashita Tokyo City University, Tokyo-Pref, Japan Keywords: Laboratory studies, Human subjects, ventilation, performance/costs of indoor pollution	
<b>Standardization Of Solid-phase Microextraction Method For The Determination Of Airborne Biogenic Volatile Organic Compounds In Cleaning Products</b> Yu Huang, Steven Sai hang Ho, Kin Fai Ho, Shuncheng LEE, Yuan Gao The Hong Kong Polytechnic University, Hong Kong, Hong Kong Keywords: monoterpenes, method standardization, household reagents,	
<b>Concentration of House Dust Mites and Endotoxin in Indoor Environment: A COCOA Cohort Study</b> Yoon-Shin Kim, Cheol-Min Lee, Keun-Young Kim, Jin-Won Jung, Seung-Cheol Hong, Soo-Jong Hong INJE University, Gimhae, Korea, Republic of Keywords: house dust mite, endotoxin	
<b>Inter-zonal Migration Of Airborne Infectious Particles In Isolation Wards By Human Movement</b> W. T. Leung, G. N. Sze-To, Christopher Y. H. Chao, Joseph K. C. Kwan, Samuel C. T. Yu, C. K. Wong The Hong Kong University of Science and Technology, Department of Mechanical Engineering, Hong Kong, Hong Kong Keywords: Migration ratio, E. coli, Negative pressure, Containment effectiveness, Hospital Environment	
<b>Technical solutions for reducing indoor residential exposures to ultrafine particles from second-hand cigarette smoke infiltration</b> Alireza Afshari, Siamak Rahimi Ardkapan, Niels Christian Bergsøe, Matthew S. Johnson Danish Building Research institute, Aalborg University, Energy and Environment, Hoersholm, Denmark	
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Keywords: Second-hand smoke, Cigarette, Ultrafine particles, In-duct air cleaner, Sealing

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##### **Quality**

Lei Fang, Pawel Wargocki, Adam Targowski, Toshio Tanaka, Kenkihi Kagawa

International Centre for Indoor Environment and Energy, Department of Civil Engineering, Technical University of Denmark, Lyngby, Denmark

Keywords: Air cleaning, Comfort, Ventilation,

#### **An Intervention Study In Moisture Damaged Homes – preliminary results before renovation**

Anne Hyvärinen, Martin Täubel, Michael Sulyok, Vinay Vishwanath, Mari Turunen, Kati Järvi, Riitta-Liisa Patovirta, Tomi-Pekka Tuomainen, Juhani Pirinen, Rudolf Krska, Juha Pekkanen, Aino Nevalainen

National Institute for Health and Welfare, Department of Environmental Health, Kuopio, Finland

Keywords: Residential, Moisture/dampness, Microbes and microbial toxins, Other respiratory, Interventions

#### **The Quality Of Mechanical Ventilation Systems In Newly Built Dutch Dwellings**

Froukje van Dijken, Jaap R. Balvers, Atze C. Boerstra

BBA Indoor Environmental Consultancy, Rotterdam, Netherlands

Keywords: Houses, Balanced mechanical ventilation, Indoor air quality, Thermal comfort, Noise

#### **A Model Predicting Window Opening and Heating Set-point Preferences**

Rune V. Andersen, Bjarne W. Olesen, Jørn Toftum

Technical University of Denmark, Department of Civil Engineering, Lyngby, Denmark

Keywords: Occupant Behaviour, Simulation, Energy, Window opening, Heating set-point

#### **Effect of Individual Inlets on Overall LMA Distribution in a Room with Multiple Inlets**

Hwataik Han, Cheol-Yong Shin, In-Bok Lee, Kyeong-Seok Kwon

Kookmin University, Seoul, Korea, Republic of

Keywords: Ventilation effectiveness, Tracer gas, Local mean age, Multiple inlets, Livestock

#### **Evaluation Of Indoor Air Quality For Renovation Building**

Janghoo Seo, Jonghun Kim, Shinsuke Kato

Chosun University, Architecture, Gwangju, Korea, Republic of

Keywords: indoor air quality, renovation building, Ammonia, chemical reaction

#### **The Stack Effect Influence On Air Exchange Rate In Dwelling Buildings**

Anatolijs Borodinecs, Baiba Gaujena, Jurgis Zemitis, Andris Kreslins

Riga Technical University, Institute of Heat, Gas and Water Technology, Riga, Latvia

Keywords: Airtightness, CO<sub>2</sub>, ventilation rate, stack effect, internal building' elements

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<b>Occurrence Of Dampness And Mould In Schools In Three Climatic Regions Of Europe</b> Ulla Haverinen-Shaughnessy, Mari Turunen, Alicia Borrás, Jan-Paul Zock, Jose Jacobs, Richard Shaughnessy, Martin Taubel, Anne Hyvärinen, Juha Pekkanen, Aino Nevalainen National Institute for Health and Welfare, Kuopio, Finland Keywords: dampness, mould, elementary schools,	
<b>Influence Of Season And Sampling Methods On The Measured Exposure To Indoor Microorganisms And Their Inflammatory Potential</b> Mika Frankel, Anne Mette Madsen, Erik W. Hansen National Research Center for the Working Environment, Copenhagen, Denmark Keywords: Fungal spores, Bioaerosol, Exposure levels, Air and surface sampling, Seasonal variation	
<b>Passive Sorption Of Organic Compounds On Clay Bricks</b> Morten Ryhl-Svendsen National Museum of Denmark, Department of Conservation, Kgs. Lyngby, Denmark Keywords: formic acid, acetic acid, formaldehyde, VOC, museum environment	
<b>Indoor Air Risks and Impacts of Alternative Policy Interventions in the EU Countries - the IAIAQ study</b> Matti J. Jantunen, Eduardo de Oliveira Fernandes, Paolo Carrer, Stylianos Kephelopoulou National Institute for Health and Welfare, Department of Environmental Health, Kuopio, Finland Keywords: indoor air quality, sources, exposures, health risks, policy benefits	
<b>Hybrid Ventilation as an Energy Efficient Solution for Low Energy Residential Buildings</b> Peter Foldbjerg, Thorbjørn Færing Asmussen VELUX A/S, Hørsholm, Denmark Keywords: Energy Performance, Residential, Hybrid Ventilation,	
<b>The Impact Of Window Configuration On The Performance Of Energy And Daylight In Residential Buildings</b> Peter Foldbjerg, Nicolas Roy, Steven Ibsen VELUX A/S, Hørsholm, Denmark Keywords: Residential buildings, Simulation models, Daylight, Energy	
<b>Integrated Exposure For Risk Assessment In Indoor Environments</b> Arja Asikainen, Sean Semple, Denis Sarigiannis, Rudi Torfs, Spyros Karakitsios, Alberto Gotti, Katleen De Brouwere, Karen Galea, Martie van Tongeren, Matti Jantunen National Institute for Health and Welfare, Kuopio, Finland Keywords: consumer exposure, full chain modelling, internal dosimetry, pollutant case studies	

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<b>Criteria For Specification Of The Indoor Environment Of Active Houses</b> Peter Foldbjerg, Karsten Duer, Per Arnold Andersen, Ellen Kathrine Hansen, Per Friis Mortensen VELUX A/S, Hørsholm, Denmark Keywords: Guideline, IEQ, Healthy homes,	
<b>Fine And Ultrafine Particles In 20 French Dwellings Related To Time-activity Diaries</b> Olivier RAMALHO, Anthony GREGOIRE, Séverine KIRCHNER CSTB - University of Paris-Est, Health division, Marne-la-Vallée Cedex 2, France Keywords: ultrafine particles, time-activity diaries, occupancy, optical particle counter, residential	
<b>Alkaline Decomposition Of Alkali Sensitive Flooring Materials - Effect Of Concrete Surface Structure</b> Thale S W Plesser, Peter Blom SINTEF Building and Infrastructure, Oslo, Norway Keywords: Flooring, Adhesive, Degradation, Acrylate, Concrete	
<b>Styrene Exposure After A Fire Close To A Residential Building</b> Bruno Neff, Gerhard A. Wiesmüller Cologne Public Health Department (PHD), Cologne, Germany Keywords: Fire, Styrene, VOC, Iso-alkane, Indoor air	
<b>Robust Indoor Climate Design</b> Joe L. Leyten, Stanley R. Kurvers Delft University of Technology, Faculty of Architecture, Delft, Netherlands Keywords: comfort, User/occupant control of indoor environment, Commercial (offices, retail, service), Field studies	
<b>Impact Of Airing Behaviour On Air Stuffiness In Schools And Daycares Centres: Development Of A Specific Tool For Ventilation Management</b> Jacques Ribéron, Mickael DERBEZ, Murielle LETHROSNE, Séverine KIRCHNER Université Paris Est - CSTB, Champs-sur-Marne, France Keywords: intervention study, operable windows, CO2 concentrations, air renewal, air stuffiness index	
<b>Cumulative indoor exposures to Semi-Volatile Organic Compounds (SVOCs) in France: a health risk ranking based on dust ingestion route</b> Corinne Mandin, Nathalie Bonvallot, Fabien Mercier, Barbara LeBot, Philippe Glorennec University Paris Est / CSTB - Scientific and Technical Building Centre, Marne la Vallée, France Keywords: Ranking, SVOCs, Indoor dust, Health, Exposure	
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<b>Tobacco Smoke Bioaerosol</b> Christina Pehrson, Bogumila Szponar, Beston Ridha, Jacek Dutkiewicz, Ewa Krysinska-Traczyk, Jolanta Sitkowska, Lennart Larsson Lund University, Lund, Sweden Keywords: irritation, cancer, inhalation,	
<b>Impact Of Airing Behaviour On Indoor Air Quality In Schools And Daycare Centers</b> MICKAEL DERBEZ, Jacques Ribéron, Murielle LETHROSNE, Severine KIRCHNER Université Paris Est - CSTB, Champs sur Marne, France Keywords: natural ventilation, user/occupant control of indoor environment, interventions,	
<b>Building Performance Evaluation Of Newly Built School Buildings - A Pilot Study</b> Sarah M. Juricic, Froukje van Dijken, Atze C. Boerstra BBA Indoor Environmental Consultancy, Rotterdam, Netherlands Keywords: Post occupancy evaluation, Perceived indoor environmental quality, CBE's Occupant IEQ Survey,	
<b>Evaluating The Operation Of Three Air Cleaners Working Individually In A Clean Room</b> Siamak Rahimi Ardkapan, Alireza Afshari, Niels Christian Bergsøe, Matthew S. Johnson Department of Energy and Environment, Danish building research institute, Aalborg University, Hørsholm, Denmark Keywords: Air cleaner, Ozone, Particle,	
<b>Personal Control and Thermal Comfort Classification</b> Atze C. Boerstra BBA Indoor Environmental Consultancy, Rotterdam, Netherlands Keywords: Individual control, adaptive thermal comfort, local climatisation, standardisation	
<b>Effects Of Olfactory-relevant Emissions From Building Materials On Building- energy Demand</b> Jana Panašková, Birgit Müller, Dirk Mueller, Rita Streblov Technische Universität Berlin, Hermann-Rietschel-Institut, Berlin, Germany Keywords: Air quality, odours from materials, emissions, energy-efficient buildings	
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<b>Turbulence Intensity Performance Of A Personalized Ventilation Air Terminal Device At Different Perforation Rates.</b> Marta Chludzinska Warsaw University of Technology, Faculty of Environmental Engineering, Air Conditioning and Heating Department, Warsaw, Poland Keywords: personalized ventilation, thermal comfort, turbulence intensity,	
<b>Numerical And Experimental Investigation Of Particle Resuspension Due To Human Walking</b> Kyung Sul, Behrang Sajadi, Yilin Tian, Iman Goldasteh, Goodarz Ahmadi, Andrea R. Ferro Clarkson University, Potsdam NY, United States Keywords: Indoor air, Indoor particle, Human activity, Moving mesh technique	
<b>The Danish Centre for Indoor Air and Health in Dwellings - CISBO</b> Torben Sigsgaard, Geo Clausen, Lars Gunnarsen, Steffen Loft, Ingunn S. Riddervold, Peder Wolkoff International Centre for Indoor Environment and Energy, Copenhagen, Denmark Keywords: Multidisciplinary Research Centre, Indoor air and Health, Transition of knowledge, Private housing	
<b>Modern Health Worries In Sick Building Syndrome: The Västerbotten Environmental Health Study</b> Steven Nordin, Eva Palmquist, Anna-Sara Claeson, Linus Andersson, Pernilla Sandberg, Berndt Stenberg Umeå University, Umeå, Sweden Keywords: Health worry, Sick building syndrome	
<b>Cardiovascular Effects Of Indoor Exposure To Particles: Results From The PM-CARE Study</b> Serena Fossati, Patrizia Urso, Andrea Cattaneo, Anna C. Fanetti, Gaetano Garramone, Laura Ruggeri, Domenico Cavallo, Paolo Carrer University of Milan, Dept. Occupational Medicine, Milan, Italy Keywords: Particulate Matter, Personal exposure, Autonomic function, HRV, Susceptible subjects	
<b>Healthy Lives In A Healthy Air: COPD Patients Have The Right To A Safe Air And Environment. Point Of View From Patients Association.</b> Rosanna Franchi, Guglielmo De Luca, Fausta Franchi Associazione Italiana Pazienti Bpco (COPD Patients Association), Rome, Italy	
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Keywords: IAQ, chronic respiratory disease, tobacco smoke, allergy

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#### **In Some Building Components**

Zhi-Gen Wu, Wen-Quan Tao, Ya-Ling He

Tongji University, School of Environmental Science and Engineering, Shanghai, China

Keywords: Phase change material, Building application, Thermal comfort,

### **Spatial And Temporal Variability In Chlorination By-products Levels Within Indoor Swimming**

#### **Pools**

Vincent BESSONNEAU, Mickael DERBEZ, Olivier THOMAS, Michel CLEMENT

French School of Public Health-EHESP, Environmental and Health Research Laboratory, Rennes, France

Keywords: Trihalomethanes, Trichloramine, inhalation exposure, sampling strategy

### **Use Of Clothing For Body Cooling By Evaporation**

Tomonori Sakoi, Arsen Melikov, Zhecho Bolashikov, Hideaki Morikawa, Kunio Iwaki

Shinshu University, Ueda, Japan

Keywords: Thermal comfort, Clothing, Evaporative cooling, Individual control, Office work

### **Calibration Factors for Measuring PM2.5 Concentrations from Multiple Indoor Sources with a Real-Time Particle Monitor**

Philip J. Dacunto, Ruo-Ting Jiang, Viviana Acevedo-Bolton, Kai-Chung Cheng, Neil E. Klepeis,

James L. Repace, Wayne R. Ott, Lynn M. Hildemann

Stanford University, Civil and Environmental Engineering, Stanford CA, United States

Keywords: secondhand smoke, cooking, incense,

### **Differential Allergy Induction By Molds Found In Water-damaged Homes**

Marsha D. Ward, Yong Joo Chung, Lisa B. Copeland, Stephen J. Vesper

US Environmental Protection Agency, RTP NC, United States

Keywords: molds, allergy, asthma,

### **Discussion On Thermal Adaptation In Stable Neutral-hot Air-conditioned Environment In**

#### **Chongqing**

Yu YANG, Bai-zhan Li, Hong LIU, Meilan TAN

Three Gorges Reservoir Key Laboratory of Ministry of Education, Chongqing University,

Chongqing, China

Keywords: psychological adaptation, thermal sensation, skin temperature, hot-humid area

### **Mercury Emissions from PMA-Catalyzed Polymer Floors: Investigations, Mitigation, and Education**

Christina R. Bush, Marian Heyman, Carl Herbrandson, Tom Baughman, Mark Johnson

Michigan Dept Community Health, Lansing MI, United States

Keywords: phenyl mercuric acetate, Tartan® floor, polyurethane floor, rubber floor, mercury vapors

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<b>Reducing Environmental Triggers Of Asthma In Schools</b> Laura Oatman Minnesota Department of Health, Port Isabel TX, United States Keywords: asthma triggers, school-based intervention, inspection checklist,	
<b>Application Of Zeolites For The Removal Of Indoor Air Pollutants</b> Jan Gunschera, Tunga Salthammer, Doreen Markewitz, Volker Thole, Katrin Bokelmann, Annett Halbhuber, Gerhard Sextl Fraunhofer WKL, Braunschweig, Germany Keywords: zeolite, pollutants, adsorption, degradation, catalysis	
<b>The Indoor Air Quality Procedure in the ASHRAE Ventilation Standard For Commercial Buildings: Is It Needed? Is It Ready?</b> Mark J. Mendell, Michael G. Apte Lawrence Berkeley National Laboratory, Indoor Environment Department, Berkeley CA, United States Keywords: energy, indoor contaminants	
<b>Experimental study on the uptake factor of tungsten oxide particles resulting from a dropped storage container</b> Zhi Gao, Jianshun Zhang, Jerry G.A. Byington Syracuse University, Syracuse NY, United States Keywords: Standard procedure, Tungsten oxide particles, Dropped container, Uptake factor, Full-scale chamber	
<b>Thermal Stratification in the Interior Zone of Buildings with Under-Floor Air-Distribution Systems</b> Kisup Lee, Guangqing Xue, Zheng Jiang, Qingyan Chen Purdue University, West Lafayette IN, United States Keywords: Thermal gradient, Under-floor air distribution, Airflow,	
<b>Three Types of Demand-Controlled Ventilation Logic in a Single Zone System with Transient Analysis</b> Xingbin Lin, Josephine Lau University of Nebraska - Lincoln, Omaha NE, United States Keywords: Demand-Controlled Ventilation, Control logic, Transient Model,	
<b>Review Of Air Cleaning Technologies In Ventilation System For Bio-aerosols</b>	
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<b>Optimization Of A Passive Sampling Method For Determination Of Airborne Naphthalene For Residential Indoor Air Monitoring</b> Amanda J. Wheeler, Phil Fellin, Henrik Li, Mark D. Gibson, Judy Read Guernsey, Leonora Marro, Huda Masoud, Keith Van Ryswyk, Roger Sutcliffe, Marie-Eve Heroux Health Canada, Water, Air and Climate Change Bureau, Ottawa ON, Canada Keywords: Indoor air quality, method development, analytical procedure, naphthalene, monitoring	
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<b>Visible Light Photocatalytic Oxidation Of Indoor Volatile Organic Compounds</b> Zhenan Han, Victor Wei-Chung Chang, Ooi Kiang Tan, Man Siu Tse Nanyang Technological University, School of Civil & Environmental Engineering, Singapore, Singapore Keywords: Photocatalyst, Ball-milling, Spray-coating,	
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<b>Energy And Environmental Evaluation Of A Residential Building Before And After Complex Renovation</b> Hana Pustayová, Dušan Petráš Faculty of civil engineering, Technical University of Slovakia, Bratislava, Slovakia Keywords: energy performance, thermal comfort, thermal discomfort, energy efficiency measures, PMV and PPD indices	
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<b>Co-cultivated Damp Building Related Microbes Trigger Oxidative Stress Inducing Cytotoxicity, DNA damage and Inflammation in Macrophages</b> Piiia Markkanen, Jukka Pelkonen, Jorma Mäki-Paakkanen, Maija-Riitta Hirvonen National Institute for Health and Welfare, Kuopio, Finland Keywords: microbial interactions, cell death, genotoxicity, inflammation, in vitro	
<b>Inter-laboratory Study To Check The Performance Of Test Chamber Measurements For Product Emission Testing</b> Olaf Wilke, Wolfgang Horn, Katharina Wiegner BAM Federal Institute for Materials Research, Berlin, Germany Keywords: Emission test chamber, Product emission testing, VOC-emission, Round robin test	
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Fraunhofer Institute for Building Physics, Valley, Germany

Keywords: VOC, anthropogenic odors, perceived air quality, gas chromatography-olfactometry, odor intensity

## **Validation of an EDP-supported model for assessing inhalation exposure during indoor spraying processes**

Edith Berger-Preiss, Wolfgang Behnke, Heiko Kock, Wolfgang Koch, Susanne Gerling, Katrin Schröder

Fraunhofer Institute for Toxicology and Experimental Medicine, Bio- and Environmental Analytics, Hannover, Germany

Keywords: Exposure assessment, Inhalation, Biocides, Model, Field study

## **Cumulative Indoor Exposures To Semi-volatile Organic Compounds (SVOCs) In France: The ECOS Project**

Philippe Glorennec, Fabien Mercier, Olivier Blanchard, Nathalie Bonvallot, Olivier Ramalho, Corinne Mandin, Barbara Le Bot

EHESP - School of Public Health, Environmental and occupational health, Rennes, France

Keywords: environmental exposure, public health, indoor air, dust

## **Assessment Of Lighting Conditions For Older Adults In Dutch Nursing Homes**

Joost van Hoof, Marianne M. Sinoo, Helianthe S.M. Kort

Utrecht University of Applied Sciences, Research Centre for Innovation in Health Care, Utrecht, Netherlands

Keywords: low vision, illuminance, colour temperature, daylight, health care

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Emilia Durišová, Dušan Petráš

Faculty of Civil engineering, The Slovak University of Technology, Slovakia, Department of building services, Bratislava, Slovakia

Keywords: evaluation, indoor climate, measurements, low exergy system

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Yuka Ishikura, Susumu Horikawa, Tatsuya Hayashi, Shigeo Mitsuno, Satoshi Uchida, Mari Yamamoto, Naoe Nishihara, Shin-ichi Tanabe

Waseda University, Tokyo, Japan

Keywords: Energy conservation, Thermal comfort, Performance, Desiccant, Subjective experiment

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Waseda University, Tokyo, Japan

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Building Dynamics, LLC, Ashton MD, United States

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### **Beyond Green - Buildings Tailored For People**

Diotima von Kempster

DVK air vitalizing system, Düsseldorf, Germany

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Peter Foldbjerg, Lone Feifer, Ellen Kathrine Hansen, Karsten Duer

VELUX A/S, Hørsholm, Denmark

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#### **Comfort for Different Thermal Insulation Levels**

Tomoyuki Yokoyama, Toshiaki Omari, Shin-ichi Tanabe, Yumiko Takahashi

Waseda University, Tokyo, Japan

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Gunnskog, Monica Kåredal, Patrik Nilsson, Joakim Pagels, Leo Stockfelt

Ergonomics and Aerosol Technology, Lund University, Lund, Sweden

Keywords: human exposure, diesel exhaust, traffic noise, health effects, laboratory study

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David Marr, Mark Mason, Leonard Stefanski

US EPA, RTP NC, United States

Keywords: Product Emissions, Statistics, Emissions Modeling, Chamber Testing

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Chonghui Liu, Hiroshi Higuchi, Edward Arens, Hui Zhang

C&S Companies, Facilities Group, Syracuse NY, United States

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<b>Identifying Sources Of Volatile Organic Compounds And Aldehydes In A High Performance Building</b> Randy Maddalena, Anna C. Ortiz, Wen-Yee Lee, Marion Russell, Joshua S. Apte, Michael G. Apte Lawrence Berkeley National Laboratory, Indoor Environment Department, Berkeley CA, United States Keywords: Building materials, Emissions testing, Source characterization,	
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EHESP - School of Public Health, Rennes, France

Keywords: Indoor Environment, Settled dust, House dust, Standard Reference Material

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Nobumi Sahashi, T. Kurabuchi, T. Ogasawara, K. Sato, S. Ikehara, M. Ohba, S. Iwamoto

Tokyo University of Science, Tokyo, Japan

Keywords: thermal manikin, thermal resistance of clothing, convective heat transfer coefficient,

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Jan Vilhelm Bakke, Bente E. Moen, Dan Norbäck, Gunilla Wieslander

Arbeidstilsynet (The Norwegian Labour Inspection Authority), Gjøvik, Gjøvik, Norway

Keywords: Epidemiology, Field studies, Irritation, Tearfilm Break-up Time, Symptomatology

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Dong-won Yoon, Hyo-Jun Kim, Sung-Min Hong, Nam-Chul Sung

Kyungwon University, Sunnam, Korea, Republic of

Keywords: Test Chamber method, Chemical Emission, VOCs and Formaldehyde, Printer and Hard copy

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Jorn Toftum, Gabriel Bekö, Geo Clausen, Michael Callesen, Arne Høst, Carl-Gustaf Bornehag, Jan Sundell, Torben Sigsgaard

Technical University of Denmark, Civil Engineering, Lyngby, Denmark

Keywords: Questionnaires, epidemiology, field study, risk factors

### **Estimates of Shelter-in-Place Effectiveness: How Important is Outdoor Concentration Fluctuation?**

Wanyu R. Chan, Michael M. Sohn

Lawrence Berkeley National Laboratory, Berkeley CA, United States

Keywords: Toxic load, acute health effects, indoor-outdoor exposure, chemical release accidents

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Andrew Persily, Hal Levin

NIST, Gaithersburg MD, United States

Keywords: experimental design, field studies, measurement methods, study design

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<b>Factors Affecting Variations In Indoor Particle Concentrations At An Urban Commercial Building In Close Proximity To Mobile Emissions</b> Collin M. Work, Andrea R. Ferro Clarkson University, Civil and Environmental Engineering, Potsdam NY, United States Keywords: ultrafine particles, size distribution, I/O ratio, freeways, black carbon	
<b>Attribution to Trigger Factors in Sick Building Syndrome And Multiple Chemical Sensitivity- “the Vasterbotten Environmental Health Study”.</b> Anna-Sara Claeson, Eva Palmquist, Linus Andersson, Berndt Stenberg, Steven Nordin Department of psychology, Umeå, Sweden Keywords: sick building syndrome, multiple chemical sensitivity, trigger factor, questionnaire	
<b>Comparison Of Paris Area Inhabitants’ Exposure To Atmospheric Pollution According To Six Means Of Transportation</b> Hanitriniaina Ravelomanantsoa, Claudine DELAUNAY, Ghislaine GOUPIL, Sophie MAZOUÉ Laboratoire d'Hygiène de la Ville de Paris, Paris, France Keywords: transport-related pollution, car, public transport, soft mobility modes, gas and particles	
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<b>Impact Of Co<sub>2</sub> On Human Decision Making And Productivity</b> Usha Satish, William J. Fisk, Mark J. Mendell, Krishnamurthy Shekhar, Lisa B. Cleckner, Kailing Teng, Katia Eliseeva, Toshifumi Hotchi, Douglas Sullivan SUNY Upstate Medical University, Syracuse NY, United States Keywords: Productivity, IAQ, Decision Making, Performance	
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<b>An Air Cleaner Effectiveness Approach To The Analysis Of In-duct UVGI Systems</b> Joseph Firrantello, William Bahnfleth Penn State University, UNIVERSITY PARK PA, United States Keywords: Models, Contaminants	
<b>Incorporating Climate Change And Indoor Air Quality Considerations Into Building Design</b> Vivian E. Loftness Carnegie Mellon University, Pittsburgh PA, United States Keywords: Climate change, architecture	
<b>Determination of formic and acetic acids in air</b> Katharina Wiegner, Oliver Hahn, Farke Matthias, Sabine Kalus, Wolfgang Horn Federal Institute for Materials Research and Testing, Working Group IV.26, Berlin, Germany Keywords: VOCs, detection of formic and acetic acid, quantification of formic and acetic acid, air sampling	
<b>Assessing the Shelf-life of a Prototype Reference Material for Product Emissions Testing</b> Cynthia Howard-Reed, Zhe Liu, Steve Cox, Dan Samarov, Dennis Leber, John Little National Institute of Standards and Technology, Gaithersburg MD, United States Keywords: volatile organic compounds, test method validation, product certification,	
<b>The Northeast Indiana Community Environmental Health Initiative</b> Lara Lasky, Jack Barnette, Elizabeth McWhorter U.S. EPA Region 5, Air & Radiation Division, Chicago IL, United States Keywords: healthy homes, community based, wholistic approach, federal state local partnerships, engaging businesses	
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<b>Reducing Chemical Exposure To Protect Children’s Health - Furniture And Bedding Case Studies.</b> Barry Cik, Raneé Valles, Brian C. Englert GREENGUARD Environmental Institute, Atlanta GA, United States Keywords: Bedding, Certification, Standards, Products, Risk Management	
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<b>Microbiological Air Quality at Sanatorium</b> Rafal L. Górny, Krzysztof Fraczek Central Institute for Labour Protection – National Research Institute, Department of Chemical and Aerosol Hazards, Warsaw, Poland Keywords: health resort, air quality, bioaerosols, treatment procedures, building air-tightness	
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<p><b>Indoor Hygrothermal Conditions In Estonian Old Multi-storey Brick Apartment Buildings</b> Targo Kalamees, Simo Ilomets, Endrik Arumägi, Üllar Alev, Teet-Andrus Kõiv, Alo Mikola, Kalle Kuusk, Mikk Maivel Tallinn University of Technology, Chair of Building Physics and Architecture, Tallinn, Estonia Keywords: Indoor climate, temperature, humidity, moisture excess, multi-storey apartment buildings</p>	
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<p><b>Comparison Of Air Change Rates Obtained By Different Ventilation Measurement Techniques In Five Danish Homes</b> Gabriel Bekö, Sine Gustavsen, Marie Frederiksen, Barbara Kolarik, Jørn Toftum, Geo Clausen ICIEE, BYG, Technical University of Denmark, Lyngby, Denmark Keywords: Air change rate, Carbon dioxide, Homes, Linear regression model</p>	
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<b>Feasibility Of Distributed Demand Control Ventilation In Cubicle Environments</b> Vikas Dhummi, Harish J. Palanhandalam-Madapusi, H Ezzat Khalifa Syracuse University, Syracuse NY, United States Keywords: cubicle interaction experiments, cubicle coupling, TIEQ experiments,	
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<b>Measurements Of Secondary Organic Aerosols Formation From Ozone Initiated Chemistry With Or Without Human Subjects In A Field Environmental Chamber</b> Moshood O. Fadeyi, Kwok W. Tham, Wei Yi Wu, Jovan Pantelic The British University in Dubai, Sustainable Design of the Built Environment, Dubai, United Arab Emirates Keywords: Contaminants, Control and intervention, Methods, Basic processes	
<b>How To Identify Optimal Printer Location In Offices?</b> Lina Wang, Lidia Morawska Queensland University of Technology, Brisbane, Australia Keywords: multiple zones, particle number concentration, particle retention rate, ventilation, breathing zone	
<b>A Case-control Study of the Effect of Indoor Environments on Health Problems among Japanese Children Part 1: Outline of Field Survey and Results of Indoor Humidity Evaluations</b> Kenichi Hasegawa, Hiroshi Yoshino, Keiko Abe, Koichi Ikeda, Noriko Kato, Kazukiyo Kumagai, Teruaki Mitamura, U. Yanagi, Naoya Ando, Kensuke Hamada Akita Prefectural University, Yurihonjo City, Akita Prefecture, Japan	

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Benjamin Hanoune, Damien Cuny

PC2A - CNRS, Villeneuve d'Ascq, France

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#### **Development Of Dynamic Odor Bottle Method For Evaluating Odor From Wooden Building**

##### **Material**

Natsuki SATO, HOON KIM, Sin-ichi Tanabe

WASEDA University, Tokyo, Japan

Keywords: indoor air quality, perceived air quality, dynamic olfactometry method, odor

#### **Infection risk of mold exposure - Results of a workshop of the annual conference of the German Society of Hygiene, Environmental Medicine and Preventive Medicine held in Stuttgart, Germany in 2009**

Gerhard A. Wiesmüller, Regine Szewzyk, Thomas Gabrio, Steffen Engelhart, Werner J. Heinz, Oliver A. Cornely, Hans P. Seidl, Guido Fischer, Caroline E.W. Herr

Gesundheitsamt der Stadt Köln, Infektions- und Umwelthygiene, Köln, Germany

Keywords: mold, indoor air, health, infection risk, risk assessment

#### **Measurements of Viable Bioaerosol In Large Teaching Hospital Using An Ultraviolet Aerodynamic Particle Sizer (UVAPS)**

Luke Knibbs, Piotr Grzybowski, Congrong He, Lidia Morawska, Scott Bell, Celine Lee, Graham Johnson

Queensland University of Technology, Brisbane, Australia

Keywords: bacteria, indoor air, health care, particle, measurement

#### **Do Nightly Shut Down Ventilation Affect Indoor Air Quality In A Classroom During School Day?**

Linda Hägerhed Engman, Andreas Fischer, Kristina Fyhr, Svein Ruud, Sarka Langer, Evert Ljungström

SP Technical Research Institute of Sweden, Building Physics and Indoor Environment, Borås, Sweden

Keywords: reduced ventilation, Schools, indoor air quality, field study

#### **Measured Indoor Air CO<sub>2</sub> Concentration in Multi-Family Dwellings**

Hans Bagge, Dennis Johansson, Lotti Lindstrij

Lund University, Lund, Sweden

Keywords: Carbon dioxide, measurements, residential, field studies

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Andrea Yarberr, Jason McClelland, Nathan Lohse, James Apple, Ryan Vicente, Dustin Poppendieck

Humboldt State University, Arcata CA, United States

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<b>Evaluation of Infection Risk by Coughed Air in Hospital Airborne Infection Control System of New Consultation Room</b> Shoichi Morimoto, Norikazu Kobayashi, Toshikatsu Ueda, Huaipeng Tang, Shin-ichi Tanabe, Hitomi Tsutsumi, Satoshi Hori Shinryo corporation, Research & development center, Tsukuba, Japan Keywords: Health care facilities, Infectious disease, Mechanical systems and ventilation, Measurements, Risk	
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<b>Relative Contribution Of Gas Cooking To Exposure Concentrations Of Nitrogen Dioxide: A Population Exposure Modeling Study</b> Arlene Rosenbaum, Stephen Graham ICF International, Rohnert Park CA, United States Keywords:	
<b>Towards A Detailed Chemical Indoor Air Model For Residential Environs In The Southern Hemisphere Using A Dual Pathway Of Observational Data And The Master Chemical Mechanism (MCM) Framework</b> Shannan J. Maisey, Sandra M. Saunders, Peter J. Franklin, Nigel West University of Western Australia, School of Biomedical, Biomolecular and Chemical Sciences, Perth, Australia Keywords: Reactive Chemistry, Secondary Pollutants, Models,	
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Department of Building Science, Beijing, China

Keywords: VOCs, characteristic parameters, full scale chamber, furniture

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LIGIA M. MOGA, IOAN MOGA

FACULTY OF CIVIL CONSTRUCTIONS, TECHNICAL UNIVERSITY OF CLUJ NAPOCA, CLUJ-NAPOCA, Romania

Keywords: heat transfer, building energy performance, dynamic modelling, simulation, Mathematical modelling

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Hak-Joon Kim, Banwoo Han, Yon-Jin Kim, Sung-Hwa Lee, Jung-Won Park

Korea Institute of Machinery and Materials, Daejeon, Korea, Republic of

Keywords: Air cleaner, Allergen particulates, Chamber test, Removal

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Waseda University, Tokyo, Japan

Keywords: Productivity, Satisfaction vote, Worker's behavior, Office

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Bogdan Mizielski, Jacek Hendiger, Marta Chludzinska, Piotr Zietek

Warsaw University of Technology, Faculty of Environmental Engineering, Air Conditioning and Heating Department, Warsaw, Poland

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Conrad Voelker, Oliver Kornadt

Bauhaus-University Weimar, Weimar, Germany

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Michael McGuinness, CIH, CIAQP, ABIH-IEQ

R.K. Occupational & Environmental Analysis, Inc., Phillipsburg NJ, United States

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Gabriela Ventura Silva, Anabela Martins, Susana Martins, Armando Santos, Eduardo de Oliveira Fernandes, Paulo Costa

IDMEC-FEUP, Porto, Portugal

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Shibaura Institute of Technology, Tokyo, Japan

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Marie-Eve Héroux, Nina A. Dobbin, Mark D. Gibson, Judy R. Guernsey, Warren Kindzierski, Keith Van Ryswyk, Amanda J. Wheeler

Health Canada, Ottawa ON, Canada

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Kjell Andersson, Göran Stridh, Inger Fagerlund

Environmental medicine KA, Örebro, Sweden

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Dong-won Yoon, Hyo-Seok Kang, Ji-Hyun Kim

Kyungwon University, Sunghnam, Korea, Republic of

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Zhe Li, Yingxin Zhu, Borong Lin

Dept. of Building Science and Technology, Beijing, China

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Keywords: Ventilation, Schools, Performance, Respiratory

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Jörg Thumulla, Carmen KroczeK  
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Helena K. Järnström, Cynthia Howard-Reed, Stuart Dols, Andrew Persily  
VTT, Espoo, Finland

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David Hunt, Lan Chi Nguyen Weekes, Donald Weekes  
InAIR Environmental Ltd., Ottawa ON, Canada

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Univ. of Texas SPH, Div. of Epidemiology, Human Genetics and Environmental Sciences, Houston TX, United States

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Keywords: VOCs, Residential, Sources/emissions, Field studies

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<b>Personal Heating, Is It Comfortable And Can It Save Energy</b> Linda C. van Oeffelen, Kim van Zundert, Piet Jacobs TNO, Delft, Netherlands Keywords: Personal comfort, Local heating, Offices, Energy saving	
<b>Numerical Study of Personalised Ventilation Inlets in an Aircraft Suite</b> Matej Forman, Jan Fišer, Ries Bouwman, Miroslav Jícha Brno University of Technology, Energy Institute, Brno, Czech Republic Keywords: Comfort, Transportation, Models, thermal comfort	
<b>America's Largest Unaddressed Public Health Crisis For Children: Environmental Conditions Of Schools</b> Claire L. Barnett Healthy Schools Network, Albany NY, United States Keywords: children, asthma, indoor pollution, state policies, schools	
<b>Neighborhood Healthy Homes in Hartford CT- A Community participatory approach to healthy homes assessment</b> Paula Schenck, Nancy Simcox, Amy McLean Salls University of Connecticut Health Center, Farmington CT, United States	
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Keywords: Healthy homes, community participatory research, asthma and environment,

### **Pet Keeping And Its Association With Incidence Of Asthma/allergy Among Swedish Pre-school Children**

Syed Moniruzzaman, Malin Larsson, Carl-Gustaf Bornehag

Karlstad University, Karlstad, Sweden

Keywords: asthma and allergy, eczema, indoor environment, pet keeping, rhinitis

### **The Officeair Project: Preliminary Results From A Detailed Chemical Model**

Nicola Carslaw, Mike Ashmore

University of York, York, United Kingdom

Keywords: indoor air chemistry, indoor air exposure, OFFICEAIR,

### **Numerical Study Of The Deposition of Spherical and Fibrous Particles in the Human Airways**

Matej Forman, Miroslav Jícha, Jakub Elcner

Brno University of Technology, Brno, Czech Republic

Keywords: particles, other respiratory, models,

### **The impact of wood heating in houses on airborne endotoxin & sustainable heating in rural forested areas.**

J. David Miller, Danny Jiang, Ken L. Ruest, Robert E. Dales

Carleton University, Department of Chemistry, Ottawa ON, Canada

Keywords: wood heating, house characteristics, endotoxin, respiratory health, sustainability

### **The Impact of the Room Occupation and the Indoor Air Parameters on the Aerosol Particle Concentration in Classrooms**

Bernard Polednik, Marzenna Dudzinska

Lublin University of Technology, Lublin, Poland

Keywords: Indoor environment, Indoor aerosols, Students health, Schools

### **Performance Criteria For A Personalized Indoor Environment**

Bjarne W. Olesen, Arsen Melikov, Henning Grønbæk

Technical University of Denmark, International Center for Indoor Environment and Energy,

Lyngby, Denmark

Keywords: standards, occupant control, indoor environment, Energy, comfort

### **Measurement Of Corrosive And Odorous Gases Emitted From Imported And Domestic**

#### **Wallboard**

Alyson Fortune, Ku-Jih Chen, Hani Cherazaie, Chris Cornett, Madeleine Dangazyan, Wade Henton, Christopher Parnell, Michael Today

Columbia Analytical Services, Air Quality Laboratory, Simi Valley CA, United States

Keywords: drywall, Chinese drywall, elemental sulfur, sulfide emission, corrosion

### **Evaluation Methods For Long Term Indoor Environmental Quality**

Bjarne W. Olesen, Stefano Corgnati, Daniela Raimondo

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<b>Comparison Of Four Methods Used To Characterize Odorous Compounds</b> Michael Tuday, Alyson Fortune Columbia Analytical Services, Air Quality Laboratory, Simi Valley CA, United States Keywords: odor threshold, amine, carboxylic acid, volatile fatty acids, reduced sulfur	
<b>Health Risk Assessment Of Human Exposure To Indoor BTEX And Carbonyls Near Petrochemical Industrial Areas</b> Yu-Ting Su, Chia-Wei Lee, Chung-Hsuang Hung, Chung-Shin Yuan National Kaohsiung First University of Science & Technology, Dept. of Safety, Health and Environmental Engineering, Kaohsiung City, Taiwan Keywords: petrochemical industry, I/O ratio, VOCs, risk assessment, carbonyls	
<b>After The Smoke Clears: Indoor Chemistry Of Thirdhand Smoke</b> Mohamad Sleiman, Peyton Jacob, Emma M. Smith, Kevin R. Wilson, Musahid Ahmed, Neal Benowitz, James F. Pankow, Brett C. Singer, Lara A. Gundel, Hugo Destaillats Lawrence Berkeley National Laboratory, Indoor Environment, Berkeley CA, United States Keywords: Tobacco smoke, Indoor environment, Secondary organic aerosol, ozone, Nitrosamines	
<b>Building Ecology: Linking Microbial Ecology With Indoor Environment And Building Science</b> Hal Levin Building Ecology Research Group, Santa Cruz CA, United States Keywords: Microbial ecology, indoor environment factors, genomics, building ecology, indoor air sciences	
<b>Effect Of Fossil-fuel Electricity Generators On Indoor Air Quality In Kaduna Nigeria</b> Andrew Mhya Stanley, Ikemefuna Mbamali, Afolabi A. Dania Ahmadu Bello University, Department of Building, Zaria, Nigeria Keywords: Air Pollutants	
<b>Phylogenetic Analysis Of Bioaerosols Recovered From Commercial Office Environments Reclaimed From Flood Damage</b> Alina M. Handorean, Kevin M. McCabe, Keeley T. Hernandez, Norman R. Pace, Mark T. Hernandez, Alison Ling University of Colorado Boulder, Boulder CO, United States Keywords: DNA sequencing, biodiversity, airborne microbes, remediation	
<b>Computational Simulation Of Indoor Temperature: Comparative Study Between The Application Of High And Low Openings To Improve Ventilation</b> Patricia R. Drach Federal University of Rio de Janeiro - UFRJ, Programa de Pós-graduação em Urbanismo, Rio de Janeiro, Brazil Keywords: Indoor temperature, Wind fields, Opening positions, Computational modelling	
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Xiangmei Wu, Deborah H. Bennett, Rebecca Moran, Irva Hertz-Picciotto  
UC Davis, Public Health Sciences, Davis CA, United States

Keywords: indoor air, pesticide use pattern, residential environment,

## **Second Hand Cigarette Smoke in Cars**

Amanda L. Northcross, Michael Trinh, Jay Kim, S. Katharine Hammond  
University of California Berkeley, Berkeley CA, United States

Keywords: Second Hand Smoke, PAH

## **Control of PM2.5 infiltration in high-rise residential buildings: a modeling analysis**

Theodore A. Myatt, Taeko Minegishi, Joseph G. Allen, David L. Macintosh  
Environmental Health and Engineering, Inc., Needham MA, United States

Keywords: PM2.5 exposure, ventilation, green building design,

## **Risk Assessment for PCBs in Indoor Air of Schools**

David L. MacIntosh, Taeko Minegishi, Joseph A. Allen, Kevin M. Coghlan, Yuri Levin-Schwartz, John F. McCarthy<sup>1</sup>, James H. Stewart

Environmental Health & Engineering, Inc., also Harvard School of Public Health, Needham MA, United States

Keywords: Polychlorinated biphenyls (PCBs), Risk Assessment, Indoor Air, Schools, EPA methods

## **Quantitative Assessment of Inhalation Exposures Generated from Floor Mopping Practices using Fullscale Chamber – A Pilot Study**

Wenhao Chen, Justine Weinberg, Kazukiyo Kumagai, Robert Miller, Jennifer Flattery, Debbie Shrem, Jed Waldman

California Dept. of Public Health, Richmond CA, United States

Keywords: floor mopping, cleaning products, airborne exposure, chamber test, repeatability

## **Addressing climate change through residential energy upgrades: unique challenges within low-income communities and implications for health**

Gary Adamkiewicz, M. Patricia Fabian, Jonathan I. Levy, John D. Spengler

Harvard School of Public Health, Boston MA, United States

Keywords: climate, weatherization, indoor air quality, air exchange, multifamily

## **PBC Emission Rates And Flux From Legacy Construction Materials**

Taeko Minegishi, Joseph G. Allen, Kevin M. Coghlan, David L. MacIntosh  
Environmental Health & Engineering, Inc., Needham MA, United States

Keywords: Polychlorinated biphenyls (PCBs), Schools, In situ emission rates and flux, Construction materials

## **Performance Evaluation Of Mitigation Methods For PCBs In Construction Materials**

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<b>Dynamical Aspects and Design Implications for Buoyancy Chimney and Wind Scoop Ventilation in a Natural Ventilated Building</b> Jinchao Yuan, Leon Glicksman Nexant Inc, Houston TX, United States Keywords: Ventilation, Natural, Simulation, VOC, Transport	
<b>Improving Exposure Estimates to Outdoor Pm2.5 By Modeling Time-resolved And Species-specific Aerosol Penetration And Persistence Into Homes</b> Melissa Lunden, Natasha Hodas, Barbara Turpin, Lisa Baxter, David Rich, Haluk Ozkaynak Lawrence Berkeley National Laboratory, Berkeley CA, United States Keywords: particles, residential, models, inhalation	
<b>Formaldehyde Removal By Four Indoor Plant Species</b> Ahu Aydogan, Lupita D. Montoya University of Colorado at Boulder, Civil, Environmental and Architectural Engineering, Boulder CO, United States Keywords: Indoor air quality, interior plants, volatile organic compounds, formaldehyde, growing media	
<b>Thermal Interaction of Closely Spaced Persons</b> Henrik Brohus, Peter V. Nielsen, Michael Thøgersen Aalborg University, Aalborg, Denmark Keywords: Measurements, Human subjects, Ventilation, User/occupant control of indoor environment, Thermal interaction	
<b>Building Product VOC Emission Testing And Conformity Assessment Procedures In The U.S.</b> Alfred T. Hodgson, Wenhao Chen, Henry Willem, Hal Levin Berkeley Analytical Associates, LLC, Richmond CA, United States Keywords: product claim, certification, self-declaration, green building code, low VOC-impact product	
<b>Qualitative And Quantitative Change Of Indoor Air Microorganism Population By Construction Work</b> Roya Mortazavi, Parisa Ariya McGill, Montreal QC, Canada Keywords: renovation, bacteria, occupants, worker, respiratory diseases	
<b>Effects Of Occupational Exposure To Essential Oils On Aromatherapists</b> Huey-Jen Su, Ya-Hui Chang, Nai-Yun Hsu, Wei Lin College of Medicine, National Cheng Kung University, Department of Environmental and Occupational Health, Tainan, Taiwan	
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Keywords: aromatherapy, TVOCs, tear film break-up,

#### **Indoor Air Performance Calculations And Values With Obscure Origins**

William Rose, Paul Francisco

University of Illinois at Urbana-Champaign, Building Research Council, Champaign IL, United States

Keywords: residential buildings, attic ventilation, infiltration, radon, policy

#### **Indoor Air Pollution in an Indigenous Highlands Community in Peru**

Odessa M. Gomez, Alina M. Handorean, Mark Hernandez, Erica L. Brandt, Amalia A. Lopez, Lupita D. Montoya

University of Colorado at Boulder, Boulder CO, United States

Keywords: Biomass combustion, black carbon, PM2.5, carbohydrates, proteins

#### **Greater Self-Perceived Severity Of Respiratory Symptoms With Controlled Beta-Pinene**

##### **Exposure**

Huey-Jen Su, Ya-Hui Chang, Nai-Yun Hsu, Pei-Chih Wu, Ching-Chang Lee, Yu-Tung Dai

College of Medicine, National Cheng Kung University, Department of Environmental and Occupational Health, Tainan, Taiwan

Keywords: essential oil, beta-pinene, chamber, nasal patency, visual analogue scale

#### **Characteristics Of Temporal Variation Of Indoor Particulate Matter At Hospitals In Taiwan**

Chien-Cheng Jung, Pei-Chih Wu, Huey-Jen Su

Dept. of Environmental and Occupational Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan

Keywords: indoor air, hospital, particulate matter,

#### **Environmental Justice And Home Ecology: Learning From The Past, Present And Future Of**

##### **Community-based Participatory Research In Indoor Environmental Sciences.**

Elizabeth A. Walsh

University of Texas, School of Architecture, Austin TX, United States

Keywords: green and healthy housing, transdisciplinary research, adaptive co-management, field studies, environmental justice

#### **The Impact Of Smoking Bans On Birth Weight--Is Less More?**

R. J. BRIGGS

THE PENNSYLVANIA STATE UNIVERSITY, UNIVERSITY PARK PA, United States

Keywords: Environmental Tobacco Smoke, Policy, Health,

#### **Analysis of Natural Ventilation Rate In a Villa Based on Two Measuring Techniques**

Chen Huang, Xin Wang, Jianjun Ye, Tianfu Deng, Hu Yu

University of Shanghai for Science and Technology, Shanghai, China

Keywords: Natural ventilation rate, accessorial airflow passage, tracer gas technique, building, single room

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<b>Reviewing the methods applied to study the indoor spread of airborne bio-contaminants inside ventilated environments</b> Sandro T. Conceição, Arlindo Tribess, Marcelo L. Pereira University of Sao Paulo, Mechanical Engineering, São Paulo, Brazil Keywords: Indoor air, airborne droplets, cross infection, experimental methods, literature review	
<b>Use Of A Dusting Cloth For the Mycological Surveillance Of Operating Rooms</b> Daniela D'Alessandro, Franco Cerquetani, Massimo Fabiani, Nicoletta Vescia Sapienza University, Civil Building Environmental Engineering, Rome, Italy Keywords: environmental surveillance, dusting cloths, surfaces, filamentous fungi	
<b>On The Operating Rooms Ventilation System</b> Behrang Sajadi, Goodarz Ahmadi, Mohammad Hassan Saidi Clarkson University, Potsdam NY, United States Keywords: Operating room, Ventilation system, Computational fluid dynamics, Surgical site infection	
<b>Harvested Rainwater Quality The Outdoor To Indoor Link</b> Kerry A. Kinney, Sarah Frakhreddine, Litta Untung, Carolina Mendez, Tara Gloyna, Michael Barrett, Steven Windhager, Mary Jo Kirisits, Sungwoo Bae The University of Texas at Austin, Civil, Architectural & Environmental Engineering, Austin TX, United States Keywords: harvested rainwater, indoor use, disinfection, disinfection byproducts, bioaerosol	
<b>Risks Of Multiple Allergy Diseases And Asthma From Indoor Exposure To Modern Chemicals And Mould Species</b> Hyunok Choi, Malin Larsson, Syed Moniruzzaman, Carl-Gustaf Bornehag Harvard School of Public Health, Boston MA, United States Keywords: home indoor, asthma, allergies, moisture	
<b>Evaluation of Strategies for Natural Ventilation at the Syracuse Center of Excellence Building</b> Suresh Santanam, Harish Palanthandalam-Madapusi, Osman Ahmed Syracuse CoE, Syracuse NY, United States Keywords: Natural Ventilation, Sustainable buildings, Ventilation control, Building automation	
<b>Model for Methamphetamine Contaminated Building Materials</b> Meng Ke, Glenn C. Morrison, Shi Shu, Richard Corsi UT Austin, Austin TX, United States	

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<b>Effects of Relative Humidity on Chemical Off-Gassing in Residences</b> Miriam Nnadili, Neil Crain, Richard L. Corsi The University of Texas at Austin, Austin TX, United States Keywords: residential, field studies, VOCs, relative humidity	
<b>Comparison of Secondhand Smoke in Bars and Restaurant Non/smoking Sections</b> David L. Bohac, David T. Grimsrud, Martha L. Hewett, Kristopher I. Kapphahn, Michael G. Apte, Lara A. Gundel Center for Energy and Environment, Minneapolis MN, United States Keywords: Secondhand smoke, PM2.5, UVPM, Nonsmoking section, Hospitality venue	
<b>Clinical Response in Asthma by Improved Housing Design &amp; Construction</b> Tim K. Takaro, James W. Krieger, Lin Song, Nancy Beaudet, Denise Sharify Faculty of Health Sciences, Simon Fraser University, Burnaby BC, Canada Keywords: Asthma, Home assessment, Environmental justice, dampness, mold	
<b>Assessing impacts of Indoor Air Quality of green health care facilities and health workers's perceptions</b> Kok Wee Ng, Victor Wei-chung Chang, Keiko Hirota, Deo Prasad, Goran Runeson Universtiy of New South Wales, Sydney, Australia Keywords: Sustainability, Green Hospital Design, Post Occupancy Assessment, Indoor Air Quality	
<b>Biomonitoring for an indoor air quality and risk assessment</b> Radoslaw Czernych, Galezowska Grazyna, Wolska Lidia Medical University of Gdansk, Gdynia, Poland Keywords: indoor air quality, biomonitoring, risk assessment, Microtox, Ames Test	
<b>Application of the ecotoxicological assay in the quality of building and furniture materials</b> Grazyna Galezowska, Radoslaw Czernych, Katarzyna Wilma, Lidia Wolska Medical University of Gdansk, Gdynia, Poland Keywords: VOC, building and fitting materials, VOC, IAQ, VOC, IAQ, building and fitting materials	
<b>An Assessment of Risk from Exposure to Second Hand Smoke in Minnesota Bars and Restaurants</b> Ruiling Liu, David L. Bohac, Lara Gundel, Martha Hewett, Michael Apte, Katharine Hammond University of California, Berkeley, Davis CA, United States Keywords: Secondhand smoke exposure, Hospitality venues, Risk assessment,	

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Martha J. Hewett, David L. Bohac, Kristopher I. Kapphahn, David T. Grimsrud, Michael G. Apte, Lara A. Gundel

Center for Energy and Environment, Minneapolis MN, United States

Keywords: Secondhand smoke, PM2.5, bar, restaurant, hospitality

### **IMPACT OF SMOKING BAN ON INDOOR AIR QUALITY IN PORTUGUESE RESTAURANTS**

Joana Madureira, Ana Sofia Mendes, Paula Neves, João Paulo Teixeira

National Health Institute Dr. Ricardo Jorge, Porto, Portugal

Keywords: smoking Ban, indoor air quality, benzene, respirable particulate matter, restaurants

### **Aircraft Cabin Environment and Passenger Health Symptoms and Discomfort**

Hanine Estephan, Eileen McNeely, Ann Louise Sumner, John Spengler

Harvard School of Public Health, Exposure, Epidemiology and Risk Program, Boston MA, United States

Keywords: cabin air quality,, environmental control systems, relative humidity,

### **Linking Personal Space Preferences to Indoor Air Quality**

Lindsay Graham, Meng Ke, Erin Darling, Richard L. Corsi, Samuel D. Gosling

The University of Texas at Austin, Austin TX, United States

Keywords: space preferences, emissions, ambiances, indoor VOC concentrations

### **Recent IAQ regulation in Korea**

Yoon Shin Kim, Cheol Min Lee

Hanyang University, Seoul, Korea, Republic of

Keywords: IAQ, Korea

### **A study on the emission possibility of asbestos into the indoor environment in using asbestos-contained home appliances**

Yoon Shin Kim, Wha. Me Park

Hanyang University, Seoul, Korea, Republic of

Keywords: Asbestos, Home appliance, Indoor Environmental Quality,

### **A technology-specific methodology for evaluating the GHG mitigation potential of advanced improved cookstoves**

Samual Evans, John Field

Colorado State University, Fort Collins CO, United States

Keywords: products of incomplete combustion, global warming potential, cost-benefit analysis, gasifier cookstove, developing countries

### **Stove use monitors (SUMs) as a method to measure fuel use and savings in Bangalore, India**

Anoop Muniyappa, Simone Brant, David Pennise

University of California, Berkeley, Berkeley CA, United States

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<b>Social barriers to improved stove adoption in El Fortin, Nicaragua</b> Lindsay Davis, Maggie Clark, Judy M. Heiderscheidt, John Volckens, Stephen J. Reynolds, Bevin Luna, Kirsten Koehler, Stuart Conway, Annette Bachand, Jennifer Peel Colorado State University, Louisville CO, United States Keywords: barriers, cookstoves, health, indoor air pollution, surveys	
<b>Stove drive cycle analysis and performance mapping</b> Jason Prapas, Christian L'Orange, Morgan DeFoort Colorado State University, Fort Collins CO, United States Keywords: drive cycle, field data, mapping, cook stoves, developing countries	
<b>Impact of an improved stove intervention on exposure and health among Nicaraguan women</b> Sarah Yoder, Maggie L. Clark, Judy M. Heiderscheidt, John Volckens, Stephen Reynolds, Bevin Luna, Kirsten Koehler, Stuart Conway, Annette Bachand, Jennifer Peel Colorado State University, Fort Collins CO, United States Keywords: cardiovascular disease, cookstoves, indoor air pollution, respiratory disease, stove adoption	
<b>Influence of vaporization losses on cook stove testing</b> Christian L'Orange, Morgan DeFoort, Bryan Willson Colorado State University, Fort Collins CO, United States Keywords: Biomass, Combustion, Cook Stoves, Test Protocol, Developing countries	
<b>Situational analysis of household energy and biomass use and associated health burden of indoor air pollution and mitigation efforts in Pakistan</b> Zafar Fatmi, Asma Rahman, Ambreen Kazi, Masood Kadir, Nalini Sathiakumar Aga Khan University Karachi, Karachi, Pakistan Keywords: developing countries, biomass, energy, health burden, mitigation	
<b>Chronic Prenatal life exposure to carbon monoxide in woodsmoke and children's neurodevelopment in rural Guatemala: A pilot study</b> Linda Dix-Cooper, Brenda Eskenazi, Carolina Romero, John Balmes, Kirk Smith UC Berkeley, Berkeley CA, United States Keywords: indoor air pollution, cook stove, child development, prenatal exposure, developing countries	
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Steve Kembel, G.Z. (Charlie) Brown, Brendan Bohannon, Jessica Green  
University of Oregon, Center for Ecology and Evolutionary Biology, Eugene OR, United States

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Lew Harriman  
57 South Street, Portsmouth NH, United States

### **Newton Meets Darwin in the Indoor Microbiome**

William W. Nazaroff  
661 Davis Hall, Department of Civil & Environmental Engineering, Berkeley CA, United States

### **Ribosomal RNA Surveys of Human-Occupied Indoor Environments**

Norman R. Pace, Laura Baumgartner, Piret Koll, Kimberly Ross, Steven Mihaylo, Leah Feazel,  
Mark T. Hernandez, Daniel Frank, Charles Robertson  
University of Colorado, Boulder CO, United States