



2013 Number 4

# ISIAQ NEWSLETTER

July 2013

## Call for Proposals to Host Indoor Air 2016

The ISIAQ Board of Directors and the Members of the International Academy of Indoor Air Sciences (Fellows of ISIAQ) are soliciting proposals to host Indoor Air 2016, the 14th International Conference on Indoor Air Quality and Climate. The meeting series, which began in 1978, is the premier international conference on indoor air quality and climate, attracting between 700 and 1100 participants during the last six offerings. The 13th meeting, to be held in Hong Kong, in July of 2014, is expected to attract large participation.

You may download the [Call for Proposals](#) from the ISIAQ web site. It describes the conditions that will be required of the host organization and conference president. Please review it if you are interested in hosting the conference in your country. All Proposals will be reviewed by The Board of Directors and host organizations notified of acceptance.

Deadline for submission of proposal must reach the Secretariat in Santa Cruz, California, by close of business local time on February 1, 2014 (email: [info@isiaq.org](mailto:info@isiaq.org). mailing address: 2548 Empire Grade, Santa Cruz, CA 95060 USA). Questions on the proposal requirements or final selection process should be submitted in writing to the ISIAQ Secretariat.

Please be certain to include contact information for key personnel when you submit your proposals. The Board of Directors reserves the right to negotiate

the terms of the agreement to host based on the Call for Proposals and the selected host's proposal submittal.

### Environment and Health Basel 2013

#### ISIAQ Plenary Session

Wednesday August 21, 2013 – Plenary hosted by the International Society for Indoor Air Quality and Climate (ISIAQ) Risk and Health: Following the Path of Exposure

Summary: When searching for the sources of hazardous exposures, researchers often end up examining the role of the indoor environment. This session features illustrative examples of interdisciplinary, cross-media, indoor air quality and climate science, using the “full chain model” to follow hazardous exposures from the source to environmental exposure to human uptake and, finally, to health effects. The role of ISIAQ’s members in this endeavour will also be discussed.

Speakers: Carl-Gustaf Bornehag, Charles J. Weschler, and Pawel Wargocki. Link to full description:

<http://www.ehbase13.org/english/plenaryInformation.ph>

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## ***Annual General Meeting***

The Annual General Meeting (AGM) of ISIAQ will take place August 21, 2013 at noon Central European Summer Time, in Basel, Switzerland, at the Congress Center. It will take place during the ISES-ISEE-ISIAQ 2013 Conference: Environment and Health – Bridging South, North, East and West.

A report of the Board of Directors will be distributed to all members in advance of the meeting and will be posted on the ISIAQ web site. The report will be presented at the meeting, with time for comments and questions.

Note: according to ISIAQ's By-laws, each member has the right "to appoint a proxy to exercise the same voting rights that the member appointing such a proxy would be entitled to exercise if present at the meeting."

## ***Student and New Researchers Activities***

The Student and New Researchers networks of ISES, ISEE and ISIAQ have joined forces to propose an attractive program dedicated to students and new researchers at the upcoming Environmental Health conference in Basel. We are excited to invite you to the following activities:

### **Student Poster Competition:**

If you're presenting a poster at the conference, sign up for the Student Poster Competitions. Each society will have judges circling the poster sessions and thoroughly vetting the posters that have signed up. Up to three winners from each society will be announced during the Friday plenary session. Getting an award in front of 1000 leaders in your field is a good way to kick start your career, wouldn't you say? Plus, if you don't get one of the awards, it is still a very good opportunity to have expert judges looking at your work and providing you feedback! So don't forget to sign up by July 31th!

### ***Pre-conference workshop:***

Monday August 19th, 13-16 h: Pre-conference workshop 11: The Exposome: how to deal with exposure signatures and cocktails from the perspective of ISES, ISEE and ISIAQ

We have invited a senior professor from each of the 3 societies to address a common topic, the

Exposome, from the perspective of the society they represent in a short lecture, followed by a general discussion focused on how the societies are complementary and what we can learn from each other. This workshop gives a bird's eye perspective on the broad field of environmental health, the different sub-fields and their interactions. It is also a great opportunity to meet other young researchers straight away and plunge into a great conference together.

If you would like to learn about the Exposome from the experts Tom McKone (LBNL for ISES), Joel Schwartz (Harvard for ISEE), Charles Weschler (UMDNJ for ISIAQ) and Paul Liroy (UMDNJ as moderator), please register at:

<http://www.ehbasel13.org/english/preConferenceWS.php>

### ***During the conference:***

Tuesday August 20th, 7.45-8.30 h.: Academic CV Writing/Preparing for a Research Career

Well, the title kind of says it all. During this morning session, 4 speakers will boost your HR-potential to unknown heights, sharing best practices on CV writing, bringing you up to speed on the academic recruiting process and explaining what aspects of yourself appeal to recruiters. We have included speakers from North America, Europe and Asia, so wherever you're coming from or plan on going to, there will be someone here to discuss cultural differences. Exciting guest speakers include: Dr. Andrea Ferro (Clarkson University/USA), Dr. Barbara Hoffman (Leibniz Research Institute for Environmental Medicine/Europe), and Dr. Christopher Chao and Dr. Yuguo Li (The Hong Kong University of Science and Technology/Asia)

Tuesday night August 20th: Student and new researchers social event

An informal gathering with other students and new researchers, in a beautiful Basel setting. If you haven't registered yet, you'll have to crash the party though, because this one is fully booked!

Wednesday August 21th, 7.45-8.30 h.: How to review a journal paper?

Publishing with strict peer review is the very core of being an academic and like social media that populate our daily lives, it is completely user generated, so join in and accept invitations to review papers from others! This may seem like a daunting task, but with the do's and don'ts from this morning session, you will soon feel right at ease giving valuable feedback to your peers. After all, we're all experts and nothing is more stimulating than getting a strong and helpful review.

#### Thursday August 22th, 19-20.30 h.: Mentorship!

There is nothing like finding a safe haven on the rocky seas. Working as a researcher is highly demanding, with deadlines and a myriad of other commitments. Having someone to turn to discuss where you are going with a long term perspective and some healthy distance is a welcome change in this hectic context. That is exactly what the mentorship programs proposed by ISES, ISEE and ISIAQ are all about. In this evening workshop, we will present the 3 programs to you over drinks and appetizers and of course there will be ample opportunity to meet up with prospective mentors. Mingle, start talking and continue the conversation throughout your career.

#### Friday August 23th, 8.45-10.30 h.: Award presentation

Still can't come up with a better way to fast-track your way to repute? Us neither. So come join this nail-biting event to see if giving it your all during the poster sessions has paid off.

#### **International News**

### **National Australian Built Environment Rating System**

The Australian Federal Government administers a suite of building rating tools called NABERS (National Australian Built Environment Rating System). The tool with highest industry uptake is NABERS ENERGY, while the tool with the lowest level of industry uptake is NABERS INDOOR ENVIRONMENT. Stakeholder feedback on the disappointing performance of the IEQ tool to date points unequivocally to its prohibitive costs (oftentimes > \$10,000 per building). A technical advisory group consisting of The University of

Sydney IEQ Lab, environmental consulting firms, and commercial building portfolio owners are currently advising NABERS on a fundamental redesign of a more accessible, affordable and robust office building IEQ rating protocol covering thermal comfort, IAQ, acoustics and lighting. The revised tool aims to elevate general awareness of IEQ issues within Australia's commercial property sector and to enable high performance on thermal comfort and indoor air quality being used as effectively in marketing of Australian commercial property as high energy efficiency is currently used.



#### **Member News**

### **Prof. dr. ir. Philomena M. Bluysen's Inaugural Speech**

Prof. dr. ir. Philomena M. Bluysen gave her inaugural speech on May 22, 2013 as Professor of Indoor Environment at the Delft University of Technology titled "Understanding the indoor environment".



Click to view the speech: [Bluysen's Inaugural Speech](#)



# ASHRAE IAQ 2013

## Environmental Health in Low Energy Buildings

October 15–18, 2013  
[www.ashrae.org/iaq2013](http://www.ashrae.org/iaq2013)



Renaissance Vancouver Hotel Harbourside | Vancouver, British Columbia, Canada

IAQ 2013 reviews the state of knowledge on the balance between environmental health and energy efficiency in the pursuit of low energy buildings.

The conference covers a broad range of topics including residential and commercial buildings, new construction and retrofit, active and passive approaches, design and operation.

IAQ 2013 will help define future design, education, policy and research directions to re-emphasize the importance of environmental health in buildings.



Some 145 conference papers and extended abstracts have been invited. Tracks are as follows:

- Track 1 - Environmental Health in Low Energy Buildings
- Track 2 - Moisture and Health
- Track 3 - Sources and Chemistry
- Track 4 - IEQ Factor Interactions
- Track 5 - Residential Buildings
- Track 6 - Commercial and Institutional Buildings
- Track 7 - Air Cleaning and Filtration
- Track 8 - Microorganisms and Infection
- Track 9 - Tools (models, measurements and more)

A complete listing of accepted conference papers and extended abstracts can be found at [www.ashrae.org/iaq2013](http://www.ashrae.org/iaq2013).

Plenary Lectures will be given by four distinguished international authorities:

- William Bahnfleth, Ph.D., P.E., Fellow ASHRAE, ASME Fellow, Pennsylvania State University, 2013–14 ASHRAE president, "Are We Putting Enough Energy into Making Buildings Healthy?"
- Richard Corsi, Ph.D., P.E. University of Texas, Austin, Indoor Air 2011 president, "Building Energy and Reactivity."
- Mark J. Mendell, Ph.D., Lawrence Berkeley National Laboratory and California Department of Public Health, "Do We Know Much about Low Energy Buildings and Health?"
- Pawel Wargocki, Ph.D., Danish Technical University, ISIAQ president, "What Can Europe Teach Us?"

Registration	Member	Non-member	Speaker
Early bird through Aug. 30	\$550	\$600	\$400
Regular fee through Sept. 30	\$600	\$650	\$400
Onsite fee beginning Oct. 1	\$650	\$700	\$400

Conference proceedings and breaks, lunches and a reception included in registration fee.

**Co-organized by ISIAQ.**

IAQ2013 is the 17th in the ASHRAE IAQ conference series.

Surrounded by water on three sides and nestled alongside the Coast Mountain Range, Vancouver is the largest city in the province of British Columbia with over half a million residents and one of the mildest climates in Canada. Home to spectacular natural scenery and a bustling metropolitan core, Vancouver was Host City to the Olympic and Paralympic Winter Games in 2010.



[www.ashrae.org/iaq2013](http://www.ashrae.org/iaq2013)

**ISIAQ members are eligible for the Member discounted registration rate**

## Obituary: Professor Michael D. Lebowitz, ISIAQ Fellow

It is with great sadness that we report the death of Professor Michael D. Lebowitz, ISIAQ Fellow, who passed away over the weekend of April 27-28 in his sleep.

Mike received his first degree in psychology from UC Berkeley in 1957, and his PhD in epidemiology and international health from University of Washington at Seattle in 1971. He was Professor of Medicine and Public Health, and Director of Arizona Prevention Center at the University of Arizona College of Medicine, Tucson, US.

Mike published widely on respiratory health and its relationship to air pollutant exposure. For example, three decades ago, he published an article in the Annual Review of Public Health entitled "Health effects of indoor pollutants" (Vol 4, 203-221, 1983).

Michael Lebowitz was selected in the 1991 "inaugural class" as a member of the International Academy of Indoor Air Sciences (now the ISIAQ Academy of Fellows). He served on the editorial board for Indoor Air (2000-2002). He also served as a member of STC 32 - environmental/climate impacts.

At this time, our hearts go out to his family.

May Michael rest in peace!

ISIAQ Academy of Fellows Executive Committee

### STC Report

## Personal Exposure to Indoor Aerosols: a review by the STC12

Chair: Lidia Morawska

Vice Chair: Tunga Salthammer

The ISIAQ Scientific and Technical Committee (STC) 12 is focused on "Source, monitoring and evaluation: Aerosols"<sup>1</sup>. As its first priority the STC12 undertook to identify and review new and emerging research directions in the field of indoor aerosols. Globally, there has been a growing awareness of the significance of airborne particulate matter as a risk factor. A powerful, multi-dimensional study, published as a series of articles in The Lancet in December 2012, demonstrated that "Worldwide, the contribution of different risk factors to disease burdens has changed substantially, with a shift away from communicable diseases in children towards non-communicable

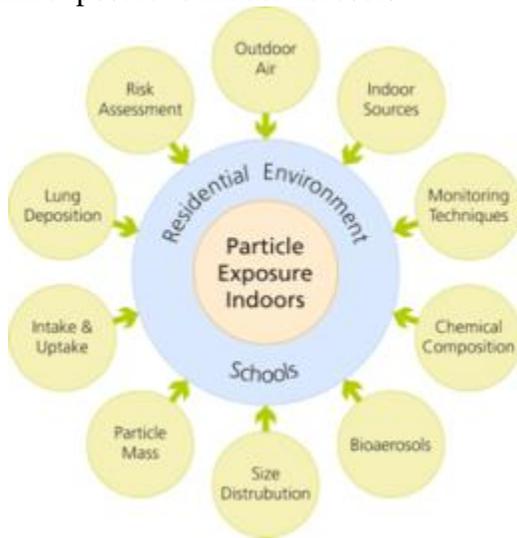
diseases in adults", with ambient particulate matter pollution ranked among the key contemporary risks (Lim et al., 2012).

After discussing several options, the STC12 unanimously decided that the first review will be focused on "Personal Exposure to Indoor Aerosols". It was considered a very important topic, with many groups around the world currently conducting projects in this area. Therefore, we felt that bringing together what is known in this field, discussing what needs to be done and exploring where the current challenges are, would be of interest to our professional community. The review has been successfully completed and recently published in *Indoor Air* journal in 2013 (Morawska et al 2013).

The objectives of the review were as follows: (i) identification of state-of-the-art experimental techniques; (ii) comparison of exposure levels

### Morawska and Salthammer (continued from previous page)

reported for settings in different indoor environments and countries; (iii) assessment of the contribution of outdoor background vs. indoor sources to personal exposure; and (iv) examination of the scientific understanding of the risks posed by personal exposure to indoor aerosols.



As shown in the figure, the review was centred on domestic and school environments, due to their importance to overall human exposure. Particle exposure from burning biomass fuels and environmental tobacco smoke were not included, since these topics are sufficiently complex and diverse to warrant separate reviews. A general summary of the reviewed topics and findings is provided below.

**Personal exposure monitoring:** Particles are usually characterized by mass, number, size distribution, surface area and composition. Filter sampling techniques, in combination with gravimetry, are commonly applied for the determination of  $PM_{10}$  and  $PM_{2.5}$ , but due to high flow rates and noise generation they are of limited use in the indoor environment. Cascade impactors allow the collection of size-fractionated particles from several nanometers to micrometers. After sampling on a filter or an impactor plate, several atomic spectrometric techniques are available for subsequent chemical analysis. Light scattering devices are frequently used for the online monitoring of particle mass and number

concentrations in the field. Hand-held condensation particle counters (CPCs) allow the in-situ measurement of ultrafine particles. For more sophisticated applications, like online size-classifying, calculation of lung-deposited surface area etc, a variety of suitable methods exist. As far as monitoring strategies are concerned, measurements at fixed locations are not as reliable as measurements by personal samplers.

**The residential environment:** The evaluation of different studies showed that median indoor  $PM_{10}$  concentrations (for residences without tobacco smoking or indoor biomass burning) were slightly higher than outdoors, while median indoor and outdoor concentrations for  $PM_{2.5}$  were the same. The median value for  $PM_{2.5}$  from personal monitoring was higher than indoor and outdoor concentrations. Despite these observed similarities, one has to bear in mind that buildings filter a substantial fraction of outdoor particles and that particles can also originate from indoor sources. Studies assessing particle number concentration are more difficult to compare, which is mainly due to different measurement techniques and the variety of averaging times. However, it was shown that some activities have a dramatic influence on indoor particle number concentrations.

**Schools:** Children are a population subgroup which is very sensitive to air pollution. Classrooms are complex indoor environments with specific building designs, ventilation conditions, indoor and outdoor pollution sources and many types of activities conducted inside them. From the evaluation of published studies, the median  $PM_{10}$  value was significantly higher indoors than outdoors (observations are referred to microenvironments without indoor smoking and biomass fuel burning), which is largely due to the resuspension of particles. Median  $PM_{2.5}$  values were similar for indoor and outdoor sampling. The differences between indoor and outdoor air were also negligible for particle number concentrations. This is due to the major influence of outdoor sources of ultrafine particles

(UFPs), like traffic, and shows that outdoor measurements have to be included in the experimental design.

**Morawska and Salthammer (continued from previous page)**

**Particle composition:** The chemical composition of airborne particles is generally subject to time and location-related fluctuations, as well as the type of emission source and atmospheric conditions. In many outdoor particles, metals, ammonia, sulphate, nitrate and chloride can be found, which allow an insight into their origin. Organic and elemental carbon is usually released from combustion processes. Particles originating from indoor sources often consist of semi volatile organic compounds (SVOC), like alkanes, siloxanes etc. In addition, chemical reactions between unsaturated organic substances and ozone lead to the formation of secondary organic aerosols. Bioaerosols are a heterogeneous mixture of particles from micro-organisms, plants and animals. In indoor air, it also includes particles from house dust mites, cockroaches, insects and animals, as well as skin cells from human and pets. Sources of bioaerosols strongly depend on the climate and on the activities of dwellers.

**Particle intake and risk assessment:** Calculation of the bronchial and alveolar doses from inhaled aerosols requires the knowledge of factors such as lung morphology, breathing patterns, fluid dynamics, particle properties and deposition mechanisms. At present, the in-situ determination of particle deposition in human subjects is limited. Therefore, information on local deposition patterns can only be provided by computational modelling. Current models can be grouped into different categories, depending on the region of interest in the lung. A risk assessment procedure for indoor aerosols requires four major steps: hazard identification, exposure assessment, dose-response assessment and risk characterization. It was found that UFPs induce greater adverse health effects in humans than PM<sub>10</sub> and PM<sub>2.5</sub>, which is attributed to their higher surface area to weight ratio.

In summary, this work was motivated by growing consideration of the potential severity and risks associated with human exposure to indoor particulate matter. It is now more and more acknowledged that exposure to indoor particulate matter is likely to be one of the dominant environmental factors affecting human health globally. However, there is still a long way to go

before its' in-depth, quantitative assessment becomes available. The key research needs in this field include:

- Personal exposure monitoring, in a standardized way, with portable devices for better characterization of exposure (allowing for the capture of near-field exposures that are not well characterized by stationary monitoring);
- Characterization of microenvironment sources by means of particle chemical composition, microbiology, toxicity and size-dependent physical properties affecting exposure and dose characteristics;
- Apportionment of the contribution of indoor and outdoor particles, and different microenvironments to personal exposure, and their quantitative assessment on a population representative basis;
- Development of normalized metrics for integrated personal exposure assessment, in order to enable meaningful comparisons;
- Development of improved exposure/risk assessment methods, together with a serious focus on exposure control; and
- A more sophisticated and quantitative theory on how UFPs cause damage to humans (by surface area, number or/and other characteristics).

**Reference:**

Lim, S. et al. (2012) A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010, *The Lancet*, 380: 2224–2260.

Morawska et al. (2013) Indoor Aerosols: From Personal Exposure to Risk Assessment. *Indoor Air*, In Press, Available: <http://onlinelibrary.wiley.com/doi/10.1111/ina.12044/abstract>

<sup>1</sup>The members of the ISIAQ Scientific and Technical Committee (STC) 12 “Source, monitoring and evaluation: Aerosols” are: Lidia Morawska (Chair), Tunga Salthammer (ViceChair), Alireza Afshari, Gwi-Nam Bae, Mats Bohgard, Giorgio Buonanno, Christopher Chao, Otto Hänninen, Werner Hofmann, Christina Isaxon, Rohan Jayaratne, Pertti Pasanen, Tobias Schripp, Jørn Toftum, Michael Waring, Aneta Wierzbicka.

## About ISIAQ

With more than 800 members from more than 45 countries, ISIAQ is an international, independent, multidisciplinary, scientific, non-profit organization whose purpose is to support the creation of healthy, comfortable and productive indoor environments. We strongly believe this is achievable by advancing the science and technology of indoor air quality and climate as it relates to indoor environmental design, construction, operation and maintenance, air quality measurement and health sciences.

As a Society, our major role is to facilitate international and interdisciplinary communication and information exchange by publishing and fostering publication on indoor air quality and climate. We organize, sponsor and support initiatives such as meetings, conferences, and seminars on indoor air quality and climate; and we develop, adapt and maintain guidelines for the improvement of indoor air quality and climate.

ISIAQ's journal, *Indoor Air*, published six times per year, is the most respected and widely-cited source of scientific information relevant to building scientists and professionals. Our two major international conferences -- the Indoor Air 'xx and the Healthy Buildings 'xx conference series -- set the standard for high quality scientific information and its application to making healthy buildings. We also cooperate with government and other agencies and societies with interests in the indoor environment and climate.

To find out more about us, visit our website: <http://isiaq.org>

### International Society of Indoor Air Quality and Climate—ISIAQ

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## Corporate Memberships are available

If your organization is involved in indoor air science, policy, or practice, a corporate membership in ISIAQ will place you in the limelight with the international indoor air community.

- ISIAQ reaches more than 45 countries around the world.

- ISIAQ's conferences, considered the most important in the field, have been attended by more than 4,000 individuals.

- The official Society journal, *Indoor Air*, is respected by scientists and policy-makers as the most reliable way to keep up with the latest scientific findings in the field.

To learn more about the benefits of corporate membership in ISIAQ, visit the membership page on our web site and click on the [corporate membership link](#).

### Corporate Members

