



2010 Number 2

ISIAQ NEWSLETTER

August 2011

President's Column



Richard Shaughnessy, ISIAQ President

There has been a substantial flow of positive comments about IA 2011 which, by all accounts, was one of the most outstanding Indoor Air Conferences in ISIAQ history. Built into the success of the event was an active student program which infused new life into all aspects of the Conference. According to IA 2011 President, Rich Corsi “one of the most often mentioned compliments has been related to student involvement in the conference (as assistants, speakers, session chairs, organizers of symposia, etc)”. It is generally agreed that involvement in active Professional Societies are good for the students’ interests; however, we should also recognize that students play a vital role in the wellbeing and future health of the Societies.

The ISIAQ Board of Directors has been in favor of keeping students engaged as best possible in the Society. The Board began to explore creating a nonvoting ex-officio student position to the Board to continue/sustain progress in formulating new initiatives for students to play an active role in the Society.

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Indoor Air 2011 – Tremendous Success

There was broad consensus among the approximately 1,000 participants in Indoor Air 2011 that it was an excellent conference. Both the scientific content as well as the social program were well-received by participants. Three long years of dedicated organizational work by Conference President Richard Corsi and Technical Chairman Glenn Morrison paid off for all involved.



Key Conference organizers, Technical Chair Glenn Morrison (left) and Conference President Rich Corsi (right) were still smiling at end of the conference.

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Healthy Buildings 2012 – Abstract Submission Open

The Call for Abstracts for the 2012 Healthy Buildings Conference is now open. To submit your abstract please follow the link below.

Timeline:

- Abstract submissions now open
- Second Call for Abstracts: 1 September 2011
- Final Call for Abstracts: 15 September 2011
- Abstract submissions close: 8 October 20

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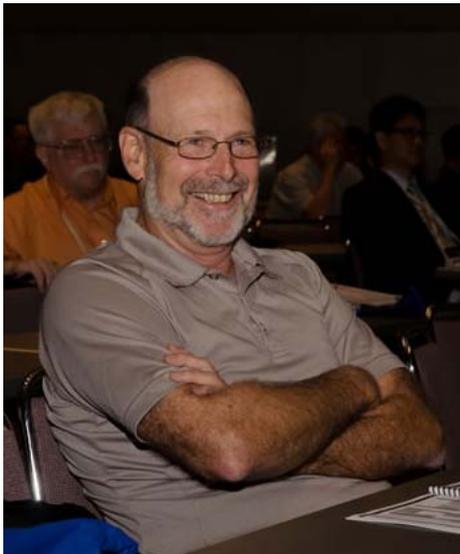
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Here are some highlights of Indoor Air 2011:

- Attendees: 992 (paid + complimentary)
- Student attendees: 270
- New ISIAQ members: 316
- Number of technical sessions: 84
- Number of papers presented: 800 (at podium = 550; as posters = 250)
- Number of forums and workshops: 21 (46 hours!)
- Number of technical sessions, forums, & workshops co-chaired by graduate students: **> 80**
- Special symposium on *Indoor Air Quality and Cook Stoves in Developing Countries*
- Special symposium on *Climate Change and Indoor Air Quality* (coincident w/release of IOM report)
- Special symposium on *Microbiomes of Built Environments*
- Number of sponsors: 18
- Number of exhibitors: 26
- Youngest presenter: Jacob Hines (10 years old) – Ventilation of School Classrooms

"I am most proud of the very high quality of our technical program, and the tremendous role that students played in making Indoor Air 2011 a great success. The future leaders of our community, indeed of our field, were obvious throughout and in all aspects of the conference." *Richard Corsi, President of Indoor Air 2011*

ISIAQ, Academy, and indoor air dignitaries at the conference



Jack Spengler (Harvard School of Public Health), an organizer of the 2nd International Conference on Indoor Air Quality and Climate in Amherst, Massachusetts in 1981. Jack is a former President of the International Academy of Indoor Air Sciences, now part of ISIAQ.

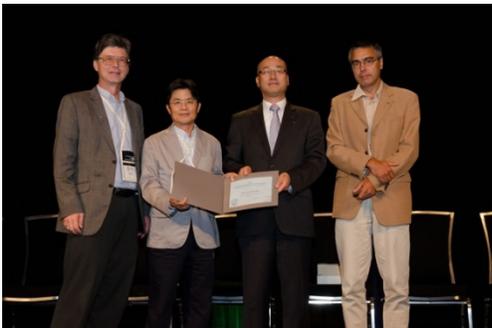


Jan Sundell (Tsinghua University, Beijing) an organizer of the 3rd International Conference on Indoor Air Quality and Climate in Stockholm, Sweden, in 1984. Jan was also President, International Academy of Indoor Air Sciences, and Editor of ISIAQ's journal *Indoor Air* from 2001-2010.



Lidia Morawska, (Queensland Univ. of Technology) President of Healthy Buildings 2012, to be held in Brisbane, Australia, July 7-12, 2012. Lidia was ISIAQ President from 2000-2003.

Photo Highlights of Indoor Air 2011



Healthy Buildings 2012 -- Call for Abstracts and Workshops are Open

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Abstract Format

The text body of the abstract should have a maximum of 250 words, in Times Roman or Arial style; font 11. Please do not use any tables, figures or bibliographical references.

Please be aware your abstract can only be submitted as a .doc or .docx file. No other file format will be accepted.

Topics

As part of the submission process you will be required to select a topic from the list below. Please select one main topic that your paper addresses (the examples in the brackets can help you in your choice)

- Comfort and climate (thermal comfort, perceived air quality, ...)
- Ventilation and controls (filtration, air cleaning, ...)
- Chemical pollutants (VOC, SVOC, ...)
- Particulate matter (Particles, Dust, ...)
- Regional solutions (developing countries, climate specific design, ...)
- Dampness and microbes (mould and bacteria, moisture control, mycotoxins, ...)
- Guidelines and policies (product safety, REACH, ...)
- Sustainable and green buildings (easy efficiency, materials and construction, Net Zero Buildings, ...)
- Productivity (human performance, perception, ...)
- Locations (public buildings, residential, ...)
- Human response (allergies, epidemiology, toxicology, ...)
- Basic processes/Fundamentals (sources/emissions, transport processes, ...)
- Impacts of outdoor air
- Other

To visit the HB2012 web site Call for Abstracts page including information on how to submit our abstract, please visit <http://hb2012.org/program/call-for-abstracts/>

HB2012 Workshop Proposals

Please follow the below example when compiling your workshop proposal:

Title: How to submit a workshop proposal

Chair: Tunga Salthammer Fraunhofer WKI, Bienroder Weg 54 E, 38108 Braunschweig, Germany

Phone +49-531-2155-213, Fax +49-531-2155-200

Email: tunga.salthammer@wki.fraunhofer.de

Short Description:

The organizers of Healthy Buildings 2012 invite proposals (one page) for workshops to be held during the conference to discuss emerging issues. Each workshop session will be scheduled for 1.5 hours. Up to 10 workshop sessions are planned during the conference. A proposal should include the following:

Title

Name, Affiliation and Email address of Chair (contact person)

Short description (less than 300 words) of the workshop including objectives, short program and questions to be discussed

Names of not more than three contributors and co-chairs to the workshop and titles of their presentations (note that at least one hour should be allocated for the discussions)

This is an example only, and not a scheduled presentation for the conference.

Please email workshop proposal(s) by September 30, 2011 to: Mrs. Jenny Bartsch

The program committee of Healthy Buildings will evaluate all submitted proposals. You will be notified of the selection decisions no later than April 1, 2012.

PLEASE SUBMIT YOUR PROPOSAL ON ONE PAGE (as PDF, .doc or .docx)

Submissions close 30 September 2011.

President's Column *(continued from page 1)*

Brent Stephens at the University of TX is a highly qualified student working on his PhD under the direction of Professor Jeffrey Siegel, and is a student member of ISIAQ.



Brent Stephens, newest member
of
ISIAQ's Board of Directors

Dr. Corsi counted on Brent heavily in prepping the student portion of the Conference at IA 2011. In addition, I have had the good fortune to interact with Brent in the past and found him extremely capable and energetic in all of his academic endeavors.

In this vein, the Board recently acted on a motion to approve immediately Mr. Stephens as a student, non-voting (ex-officio) representative to the Board that will run from now through the HB 2012 Conference. His inaugural role on the board will be to explore how we can interject more student initiatives into ISIAQ conferences and other ISIAQ activities as well. His involvement will also serve as a model for future student Board members in terms of what can be reasonably expected of a Student Board position. Brent will also work with the Board to put a mechanism in place for our student members to weigh in on the future Student Board Member nomination process among the student members.

It is with much enthusiasm that we welcome Brent to the Board, and look forward to a very prosperous venture for both the Society and the interests of our students in years to come.

Sincerely,

Richard Shaughnessy
President ISIAQ

Yuguo Li leaves ISIAQ Board of Directors

Professor Yuguo Li has served as ISIAQ Vice President for Research since his election in 2009. In that capacity, he has worked very hard toward the creation and launch of ISIAQ's Scientific and Technical Committees, STCs.

During the Indoor Air 2011 conference, it was announced that Professor Li of Hong Kong University was selected as President of Indoor Air 2014. During the meeting of ISIAQ's Academy of Fellows, Li was elected Secretary of ISIAQ's Academy of Fellows. In light of his new responsibilities, Professor Li has submitted his resignation from the ISIAQ Board of Directors. However, he has offered to continue to chair the STC Council overseeing the STCs.

The Board of Directors, according to the By-laws, may, at its discretion, appoint a replacement or leave the position vacant until the next Board election (in Spring 2012). The matter is on the Agenda for the August meeting of the Board.

Indoor Air, Volume 21, Number 4 August 2011

Abstracts

William W Nazaroff - Best Paper Awards: Indoor Air (2008–2010)

This paper recounts the best paper awards given during the week of June 5–10, 2011, when the indoor air research community gathered in Austin, Texas, for Indoor Air 2011, the 12th triennial conference of ISIAQ, the International Society of Indoor Air Quality and Climate. It has become a tradition at these conferences to bestow best paper awards to authors of top articles published in Indoor Air during the previous 3 years.

M. S. Waring and J. A. Siegel - The effect of an ion generator on indoor air quality in a residential room

Abstract Ion generators charge particles with a corona prior to their removal on collector plates or indoor surfaces and also emit ozone, which can react with terpenes to yield secondary organic aerosol, carbonyls, carboxylic acids, and free radicals. This study characterized the indoor air quality implications of operating an ion generator in a 27 m³ residential room, with four different test room configurations. Two room configurations had carpet overlaying the original flooring of stained/sealed concrete, and for one configuration with and without carpet, a plug-in air freshener was used as a terpene source. Measurements included airborne sampling of particulate matter (0.015–20 µm), terpenes and C1–C4 and C6–C10 aldehydes, ozone concentrations, and air exchange rates. When the heating, ventilating, and air-conditioning system was not operating (room air exchange rate = ~0.5/h), the use of the ion generator in the presence of the air freshener led to a net increase in ultrafine particles (<0.1 µm). Also, increased concentrations of ozone were observed regardless of air freshener presence, as well as increases in formaldehyde and nonanal, albeit within measurement uncertainty in some cases. Thus, it may be prudent to limit ion generator use indoors until evidence of safety can be ascertained.

Practical Implications Portable ion generators are intended to clean the air of particles, but they may emit ozone as a byproduct of their operation, which has the potential to degrade indoor air quality. This study showed that under certain conditions in a residential room, the use of a portable ion generator can increase concentrations of ozone and, to a lesser degree, potentially aldehydes. Also, if operated in the presence of a plug-in air freshener that emits terpenes, its use can increase concentrations of secondary organic aerosol in the ultrafine size range.

Y. Sun, Y. Zhang, L. Bao, Z. Fan, and J. Sundell - Ventilation and dampness in dorms and their associations with allergy among college students in China: a case-control study

Abstract To study the associations between dorm environment and occupants' health, a nested case-control study on 348 college students was carried out in 2006–2007 at Tianjin University, China. Two hundred and twenty-three dorm rooms where the 'cases' and 'controls' resided were inspected. Measured variables were ventilation rate, air temperature, and relative humidity indoors. Allergic symptoms in the last 12 months were self-reported by occupants. Adjusted odds ratios (AORs) of a 'localized moldy smell/moisture indicator' in 'special places' (e.g., in a room corner or close to the radiator under the window) for wheezing was 3.56 [95% Confident Interval (CI): 1.56–8.14] and for rhinitis 2.81 (95% CI: 1.32–5.97). The AOR of a low air change rate (below the median value of 0.7/h) for wheezing was 2.28 (95% CI: 1.38–3.75) and for dry cough 2.26 (95% CI: 1.08–4.75). The prevalence of students with allergic symptoms in dorm rooms decreased with increasing ventilation rate. The combination of a 'localized moldy/moisture indicator' and a low air change rate significantly increased the AOR of case status to 13.35 (95% CI: 3.73–47.83), compared to the reference condition with no-dampness and high ventilation rate (above the median). This supports the hypothesis that ventilation rate is an effect modifier for moisture problems and indoor pollutants.

Practical Implications Dorm rooms, a kind of residential environment for students, may be more polluted than the home environment. This is especially the case in developing countries like China, where dorms tend to be more crowded. In dorms, a low ventilation rate is a risk factor for asthma and allergy. Sufficient fresh outdoor air should be provided to students' dormitories by controlled ventilation. Mechanical ventilation system are often needed in regions such as north China, as the buildings are now 'tight' and opening of windows is not a solution during the cold winter.

J.S. Park and C.H. Yoon - The effects of outdoor air supply rate on work performance during 8-h work period

Abstract The purpose of this study is to evaluate the effect of ventilation rate on work performance and perceived air quality through short-term laboratory experiments. The experiment was designed to simulate office work, and a laboratory space was modified using new finish materials to become a typical office space. High levels of volatile organic compounds (VOCs) were found in the exposure chamber, most probably originating from the new finishing materials that were present. Twenty-four subjects were

(Continued on page 7)

Indoor Air – V21, N4 Abstracts (continued from page 6)

divided into six groups that were randomly exposed to the three ventilation rates, 5, 10, and 20 l/s per person. The subjects performed work tasks three separate times for each ventilation rate over an 8-h exposure period. The work performance of the subjects logarithmically improved with increased ventilation rates, which was similar to the previous research findings. Statistical significance was found for addition task, text-typing task, and memorization task. Increased work performance in this experiment was slightly lower than the results of previous short-term laboratory experiments, yet remained higher than results of previous long-term field experiments. However, it was difficult to directly compare the results of this experiment with those of previous experiments, because of the higher concentration of VOC present in the office rooms and the learning effect associated with the repeated tasks.

Practical Implications The results of this experiment show that ventilation had positive impacts on perceived air quality and work performance for the subjects tested. Work performance logarithmically increased by approximately 2.5–5% as ventilation rates were increased from 5 to 20 l/s per person. The positive effect of ventilation rate on work performance was shown to be limited at the low ventilation rate. The positive effects on work performance were at lower ventilation rates. The learning effect in repeated work performance tasks could increase the uncertainty of the work performance analysis in 8-h exposure period.

C-W Chang and F-C Chou - Methodologies for quantifying culturable, viable, and total *Legionella pneumophila* in indoor air

Abstract *Legionella pneumophila*, aerosolized from numerous indoor facilities (e.g., shower heads, hot tubs, spas), may cause Pontiac fever (PF) and lethal pneumonia named Legionnaires' disease (LD) in humans. Reliable methods on quantitative exposure assessment of this bioaerosol are essential for the prevention of PF and LD. Coupled with culture, ethidium monoazide with qPCR, and qPCR assays, the collection efficiency for culturable, viable, and total *L. pneumophila* was assessed by means of filtration sampling (IOM with gelatin filter and cassette with polycarbonate filter) and liquid-based sampling methods (BioSampler, AGI-30, MAS-100 sampler with Tween mixture and deionized water (DW)). Results show IOM/gelatin filter was comparable to cassette/polycarbonate filter ($P = 0.33$) and performed greater than all of tested liquid-based methods for total cell collection. On the other hand, IOM/gelatin filter obtained greater efficiencies than cassette/polycarbonate filter by a factor of 3.8–8.6 for viable cells ($P = 0.0006$) and two orders of magnitude for culturable cells ($P = 0.00002$). Further comparison between liquid impingement and filtration methods indicates the sampling by IOM/gelatin filter, AGI-30, and BioSampler with DW were the most appropriate for viable cells, while culturable cells were collected most efficiently by BioSampler/DW with periodical replenishment during the sampling.

Practical Implications This study recommends the most suitable methodologies for quantifying culturable, viable, and total *Legionella pneumophila* in indoor air. By using appropriate sampling and analytical methods, the residents and building owners are able to obtain the reliable data and further characterize the exposure risk and/or intervention efficacy against *L. pneumophila*. Moreover, the adoption of suitable monitoring methods also assists the investigators to explore the sources linked to PF and LD during the outbreaks. Considering reliable microbial monitoring is fundamental for epidemiological survey and risk assessment, the present information should be taken into account in assessing *L. pneumophila* indoors.

E. Johansson, S. Vesper, L. Levin, G. LeMasters, S. Grinshpun and T. Reponen - Streptomyces in house dust: associations with housing characteristics and endotoxin

Abstract In addition to mold, indoor bioaerosols also contain bacterial components that may have implications for human health. Endotoxin is a cell wall component in Gram-negative bacteria present at varying levels indoors that has been found to have respiratory health implications. *Streptomyces* is a large genus of Gram-positive bacteria, and some species have been shown to produce inflammatory reactions in vitro and in vivo. The aim of this study was to determine predictors of *streptomyces* levels in house dust and to compare the variation in streptomyces levels with that in endotoxin levels. Dust was collected by floor vacuuming from 178 homes in the Cincinnati metropolitan area. *Streptomyces* levels were measured by quantitative PCR, and endotoxin was assayed by the Limulus amoebocyte lysate method. Associations between home characteristics and bacterial contaminants, expressed as concentration and load, were investigated through multiple regression analyses. The presence of two or more dogs was a strong predictor of both *streptomyces* and endotoxin levels. Season of dust collection and levels of outdoor molds were predictors of streptomyces but not endotoxin levels. In contrast, number of inhabitants was a significant predictor of endotoxin load only. Neither *streptomyces* nor endotoxin levels were associated with metrics of moisture damage.

Practical Implications This study adds to the understanding of the sources of bacterial contaminant in indoor environments. The results suggest that *streptomyces* have mostly outdoor sources, whereas indoor sources are more important for endotoxin. The results also indicate that the presence of pets, particularly two or more dogs, is a strong source of bacterial contamination. In this study, neither *streptomyces* nor endotoxin levels were significantly associated with metrics for moisture damage. Both endotoxin and *streptomyces* levels may represent too large and diverse bacterial taxa to be consistent indicators of indoor moisture damage.

(Continued on page 8)

*Indoor Air – V21, N4 Abstracts (Continued from page 7)***H. Kim, C. Chun, A. Kwok, A. Ota and A. Tamura - Cross-city comparison of indoor air temperatures in air-conditioned spaces**

Abstract Field measurements were collected through physical measurements and observations in the cities of Seoul, Korea; Eugene and Portland, Oregon; and Yokohama, Japan, during the fall, winter, and summer seasons from 2005 to 2006. A total of 1733 data sets were collected (Seoul – 713; Oregon – 807; Yokohama – 213) in variety of multi-use buildings with the goal of examining operative temperatures and conditions encountered during everyday life. Of the four cities measured, winter and autumn indoor operative temperatures were highest in Seoul and lowest in Yokohama when normalized to outdoor conditions. In contrast, summer indoor operative temperatures were highest in Yokohama and lowest in Oregon. Clothing levels changed seasonally, and differences were observed between ‘long-term occupants’, ‘residents’, and ‘transients.’

Practical Implications To examine the wide range of conditions and thermal adaptation that humans are accustomed to in their regular everyday life (from home to work to traveling about town), we examined building operations and indoor climate conditions in four cities. The assumption was that, if notable differences exist, the application of the fixed-temperature thermal comfort standards that are applied to building environments worldwide should be re-examined, particularly in developing countries where there may be opportunities to conserve energy, to preserve local/regional adaptive behaviors, and to reduce greenhouse gas emissions.

M. Springs, J. R. Wells and G. C. Morrison - Reaction rates of ozone and terpenes adsorbed to model indoor surfaces

Abstract Reaction rates and reaction probabilities have been quantified on model indoor surfaces for the reaction of ozone with two monoterpenes (Δ^3 -carene and d-limonene). Molar surface loadings were obtained by performing breakthrough experiments in a plug-flow reactor (PFR) packed with beads of glass, polyvinylchloride or zirconium silicate. Reaction rates and probabilities were determined by equilibrating the PFR with both the terpene and the ozone and measuring the ozone consumption rate. To mimic typical indoor conditions, temperatures of 20, 25, and 30°C were used in both types of experiments along with a relative humidity ranging from 10% to 80%. The molar surface loading decreased with increased relative humidity, especially on glass, suggesting that water competed with the terpenes for adsorption sites. The ozone reactivity experiments indicate that higher surface loadings correspond with higher ozone uptake. The reaction probability for Δ^3 -carene with ozone ranged from 2.9×10^{-6} to 3.0×10^{-5} while reaction probabilities for d-limonene ranged from 2.8×10^{-5} to 3.0×10^{-4} . These surface reaction probabilities are roughly 10–100 times greater than the corresponding gas-phase values. Extrapolation of these results to typical indoor conditions suggests that surface conversion rates may be substantial relative to gas-phase rates, especially for lower volatility terpenoids.

Practical Implications At present, it is unclear how important heterogeneous reactions will be in influencing indoor concentrations of terpenes, ozone and their reaction products. We observe that surface reaction probabilities were 10 to 100 times greater than their corresponding gas-phase values. Thus indoor surfaces do enhance effective reaction rates and adsorption of terpenes will increase ozone flux to otherwise low-reactivity surfaces. Extrapolation of these results to typical indoor conditions suggests that surface conversion rates may be substantial relative to gas-phase rates, especially for lower volatility terpenoids.

R. Wiik - Indoor productivity measured by common response patterns to physical and psychosocial stimuli

Abstract Productivity is the essential organizational outcome. It is vaguely understood and difficult to quantify, especially at the individual level in office companies. Our objective was to quantify and describe the part of productivity, which is systematically influenced by the indoor environment. We, therefore, introduce the concept ‘indoor productivity,’ which is defined by measuring operations. We used the multivariate method Marker Object Projection to transform questionnaire data into an ‘indoor productivity index’ (IPI), which reflects the relative impact of the variables that systematically influence indoor productivity. The reasoning behind IPI is that indoor productivity cannot be separated from experienced indoor environment and wellness at work. IPI is calculated for each respondent based on own, colleagues’, and two fictive respondents’ answers. Conservatively, IPI was calculated to constitute about 25% of what determines the productivity of an individual. By using IPI as dependent variable in multiple regression analyses, the relative contribution of all indoor variables was identified. Physical indoor variables were as important as psychosocial ones. During the cold seasons, ‘dry air’ was the most important factor reducing IPI.

Practical Implications We have developed an ‘indoor productivity index’ (IPI) that reflects the relative impact of the variables that systematically influence indoor productivity. Because of the IPI being calculated on the individual level, the index is suitable for comparison and/or benchmarking between individuals, groups, departments, and businesses. A model is provided which makes it possible to predict the economical benefits of possible actions such as refurbishing or moving to new premises. The new model that distinguishes between the contributions from physical and psychosocial indoor environment makes it possible to identify proper decisions to improve productivity. By documenting that dry indoor air inhibits productivity significantly in winter time, we have identified an area in which innovation is needed.

Indoor Air – V21, N4 Abstracts (continued from page 8)**J. K. Gupta, C-H. Lin and Q. Chen - Inhalation of expiratory droplets in aircraft cabins**

Abstract Airliner cabins have high occupant density and long exposure time, so the risk of airborne infection transmission could be high if one or more passengers are infected with an airborne infectious disease. The droplets exhaled by an infected passenger may contain infectious agents. This study developed a method to predict the amount of expiratory droplets inhaled by the passengers in an airliner cabin for any flight duration. The spatial and temporal distribution of expiratory droplets for the first 3 min after the exhalation from the index passenger was obtained using the computational fluid dynamics simulations. The perfectly mixed model was used for beyond 3 min after the exhalation. For multiple exhalations, the droplet concentration in a zone can be obtained by adding the droplet concentrations for all the exhalations until the current time with a time shift via the superposition method. These methods were used to determine the amount of droplets inhaled by the susceptible passengers over a 4-h flight under three common scenarios. The method, if coupled with information on the viability and the amount of infectious agent in the droplet, can aid in evaluating the infection risk.

Practical Implications The distribution of the infectious agents contained in the expiratory droplets of an infected occupant in an indoor environment is transient and non-uniform. The risk of infection can thus vary with time and space. The investigations developed methods to predict the spatial and temporal distribution of expiratory droplets, and the inhalation of these droplets in an aircraft cabin. The methods can be used in other indoor environments to assess the relative risk of infection in different zones, and suitable measures to control the spread of infection can be adopted. Appropriate treatment can be implemented for the zone identified as high-risk zones.

Indoor air science and practice news from around the world

We would like to publish news from our more than 900 members around the world in each issue of the ISIAQ Newsletter. Send us information about major government actions, research initiatives, or other items of interest to your colleagues, ISIAQ members in more than 50 countries.

About ISIAQ

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

Secretariat
 2548 Empire Grade
 Santa Cruz, CA 95060 USA
 Phone: 831-426-0148
 Fax: 831-426-6522
 E-mail: info@isiaq.org



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 40 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](#).

