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ISIAQ NEWSLETTER

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Special Indoor Air 2011 Conference Issue

ISIAQ Scientific and Technical Committees (STCs)

by

Yuguo Li, Shin-ichi Tanabe, and Richard Shaughnessy

As the current ISIAQ Board strives to meet the demands and needs of its growing membership, we recently have taken steps to re-invigorate the scientific foundation of the Society and its flagship Conferences. The ISIAQ Board of Directors (BOD) voted in 2010 to establish Scientific and Technical Committees (STCs) and an ISIAQ STC Council, a joint effort by ISIAQ and ISIAQ Academy of Fellows.

STCs have three major functions. The first is to review, conclude and report new and emerging research directions in indoor air sciences. This activity of STCs is in line with the mission and vision of ISIAQ in “creation of healthy, comfortable and productive indoor environments” “by advancing the science and technology of indoor air quality and climate”. STCs will prepare and publish short articles on emerging research directions on ISIAQ Website and Newsletters, and some such articles will be submitted to Indoor Air journal. We believe that such report on new and emerging research directions will provide additional information to indoor air researchers, in particular to the young scientists, postgraduate research students and new comers in the field.

The second major function of STCs is to establish Policy Committees to develop ISIAQ policy papers on interested and emerging indoor air topics. There were various occasions that ISIAQ was asked about ISIAQ policy on issues such as natural ventilation, SVOCs and air cleaners etc. In this regard, there is a fundamental difference between STCs and the existing Task Forces. STCs are long term committees of ISIAQ, while Task Forces are short-term ISIAQ projects. The existing Task Forces will cease to exist by the end of 2011. The existing Task Forces will be replaced by Policy Committees.

Continued on page 2

In this Issue

Scientific and Technical Committees	1 - 4	<i>Indoor Air V21 N3 Editorial</i>	7 - 8
STC Manual	4	<i>Inddor Air V21 N3 Articles</i>	9 - 10
ISIAQ 2011Annual General Meeting	5	Conferences	11
ISIAQ 2010 Annual General Meeting	5	About ISIAQ	12
Healthy Buildings 2012	6	ISIAQ Corporate Membership	12
ISIAQ's journal - <i>Indoor Air</i>	7	ISIAQ's Corporate Members	12

Continued from Page 1

The third major function of STCs is to review and select papers for future ISIAQ Flagship conferences – “Indoor Air ‘xx.” It is important to note that STCs are to support our flagship conference organization, not to replace the conference organization or add pressure to the conference chairperson. The STCs represent ISIAQ in helping the local organizing committee based on the Contract signed between ISIAQ and the host organization.

As of mid-2011, seven STCs have been established. In 2 to 3 years time, it is expected that more STCs will be established.

- STC11 Source, monitoring and evaluation: chemical pollutants
- STC12 Source, monitoring and evaluation: aerosols
- STC21 Ventilation
- STC22 Air cleaning
- STC31 Health effects and epidemiology
- STC32 Environmental/climate impacts
- STC33 Thermal comfort

(The names of the STC chairpersons, their affiliation and email address as well as a brief description of each STC are found beginning on Page 3 of the *ISIAQ Newsletter*.)

ISIAQ has already developed draft STCs Regulations and an associated STC Operation Manual. Each STC has at minimum a Chairperson, two Vice-Chairpersons and a Secretary. STC chairman is served by highly-qualified scientists who are willing to contribute and who is also a world well-known leader in the relevant field. Both secretary and vice-chairpersons must be ISIAQ members. Non-ISIAQ members can serve as committee members.

A STC chairperson is recommended by the Academy of ISIAQ Fellows and/or ISIAQ BOD, and approved by ISIAQ BOD. A STC chairperson can recommend his/her own committee members, and the committee members also need to be approved by BOD.

ISIAQ STC Council is led by ISIAQ Vice President for Research and composed of Academy president and all STC chairpersons. The STC Council appoints STC chairs and also coordinates STC activities. Professor Yuguo Li of University of Hong Kong is appointed by BOD as the ISIAQ STC Council Chairman.

We are currently planning STC meetings in Indoor Air 2011, to be held in Austin in June 2011. These STC meetings will be open to all ISIAQ members and/or Indoor Air 2011 participants. If you are interested to join the STC activities, please attend these meetings and contact your STC chairpersons.

The website for STCs is <http://www.isiaq.org/stcs-1>. STC Regulations and Operations Manual available at–
http://www.isiaq.org/publications/STC%20Operation%20Manual_v04.docx

We believe that indoor air science is important to the health of human being, and STCs are important to the endeavor of ISIAQ. Most importantly, your contribution is important to the success of ISIAQ STCs. For comments, ideas and suggestions please send an email to STC Council Chairman at liy@hku.hk.

ISIAQ's Scientific and Technical Committees -- STCs

- **STC11 Source, monitoring and evaluation: Chemical pollutants**

Chairperson: 2010-2011 [John Little](#), Virginia Tech, USA – JCL@VT.edu

STC11 has decided to focus on two initial topics. Our first topic is a review of chamber techniques for measuring emissions of semi-volatile organic compounds (SVOCs). A paper will be written that describes the current state of the art and recommends the best approaches for tackling this challenging problem. Our second topic is the improvement of chamber emissions testing for volatile organic compounds (VOCs) and formaldehyde using reference materials and inter-laboratory studies. This will include the development of a guidance document for the use of reference materials and the integration of reference materials with existing standards.

- **STC12 Source, monitoring and evaluation: Aerosols**

Chairperson: 2010-2011 [Lidia Morawska](#), Queensland University of Technology, Australia – l.morawska@qut.edu.au

The first priority for the STC12 is to identify and conduct review(s) on new and emerging research directions in the field of indoor aerosols (Duty A – according to the Operational Manual). After discussing several options, the Committee unanimously decided that the first review will be focused on “Personal Exposure to Indoor Aerosols”. This is a very important topic, many groups around the world currently conduct projects in this area and therefore bringing together what is known in this field, discussing what needs to be done and where are the current challenges, would be of interest to our professional community. The ultimate goal of this work would be preparation of a high quality article to be published in the *Indoor Air* journal.

- **STC21 Ventilation**

Chairperson: 2010-2011 [Chandra Sekhar](#), National University of Singapore, Singapore - bdgscs@nus.edu.sg

STC21 will aim to conduct periodic review of ventilation research worldwide and produce series of succinct summaries of key findings that are identified as having significant impact on comfort, productivity and health. Both FUNDAMENTAL (the science that underpins natural/mechanical ventilation principles) and PRACTICAL (the engineering strategies that make ventilation solutions work in practice) aspects are integral to STC21. The influence of energy debate on ventilation solutions for IAQ will be a primary consideration, particularly in the context of climate change and sustainability. New research directions will be identified that aim to address the dual issues of IAQ and energy and explore the practical viability of engineering solutions. Possible collaborations with other international organizations, such as ASHRAE and REHVA, will be explored.

- **STC22 Air cleaning**

Chairperson: 2010-2011 [Yinping Zhang](#), Tsinghua University, China - zhangyp@mail.tsinghua.edu.cn

In addition to reporting or evaluating new research directions, advances in developing new and high performance air cleaning materials, technologies and devices/systems, this STC will explore the potential of inter-laboratories studies for evaluating available and commonly-used air cleaning materials, technologies and devices/systems, and establish a common database of air cleaner performance which is helpful not only for indoor air cleaner researchers, manufacturers but also for customers. We also aim to review and report the standard test methods that are currently available indoor air cleaners (passive or active; portable vs. ducted) and try to provide a technical basis for indoor air cleaner labeling system. This STC will prepare a series of (systematic or critical) review papers/reports.

- **STC31 Health effects and epidemiology**

Chairperson: 2010-2011 [Carl-Gustaf Bornehag](#), Karlstad University, Sweden – Carl-Gustaf.Bornehag@kau.se

The overall aim is to conclude the current knowledge and to identify research needs or directions of indoor environmental problems and related adverse health effects globally. The first priority for the STC31 is to conduct reviews on important issues including biofuels burning problems in low-income countries, controversy of dampness and mold in allergic illness, transition of indoor risks in the past decades, and emerging chemical problems such as endocrine disruptors. We will conduct meetings to invite members from different expertise to discuss and prioritize the main topics and goals for STC31 in the first stage. Review papers of current state of evidences will be prepared for publish from working groups. New research directions will be identified and call for international collaboration in further research.

- **STC32 Environmental/climate impacts**

Chairperson: 2010-2011 [Hal Levin](#), Building Ecology Research Group, California, USA – hal.levin@buildingecology.com

Buildings, their occupants, and the larger environment are intimately linked. Changes in local, regional or global environmental conditions have important public health implications including impacts on indoor air quality. At the same time, many efforts to

Continued on page 4

Continued from Page 3

address IAQ affect local, regional, and global environmental conditions. All of these together affect human health and well being. This STC will review the important considerations for indoor air scientists and professionals and develop recommendations for further action, by ISIAQ and beyond. The STC will begin its activities with a review of the National Academy of Science, Institute of Medicine committee's report, The Effect of Climate Change on Indoor Air Quality and Public Health. This review will be the basis for the STC's goals and objectives and its work plan.

• **STC33 Thermal comfort**

Chairperson: 2010-2011 [Richard de Dear](#), The University of Sydney, Australia - richard.dedear@sydney.edu.au

The priority for STC33 in its first year is to summarize progress in thermal comfort research over the last 20 years and identify emerging trends. Preliminary findings indicate the recent surge in thermal comfort research activity to result from, a) indoor thermal environmental quality implications of "green building" design and operation strategies, and b) the rapid economic development, urbanization and concomitant building construction activity in countries such as China. The ultimate goal of the STC33's work in 2011 is the preparation of a high quality review article for possible publication in the *Indoor Air* journal.

Operational manual for ISIAQ STCs – Simplified Version (Draft April 6, 2011)

Membership of STCs

- Each STC should have at minimum a chairperson, a secretary and 2 committee members. At most two vice-chairpersons and up to 20 committee members can be installed.
- STC chairpersons are recommended by the Academy of Fellows or ISIAQ BOD, and approved by ISIAQ BOD.
- A STC chairperson can recommend his/her own committee members, and submit the committee membership for approval by BOD.
- Chairperson, secretary and vice-chairperson(s) must be ISIAQ members. Non-ISIAQ members can serve as committee members.
- Service in STC is for a period of 1-3 years for each term.
- Chairperson, secretary, vice-chairperson and all committee members are voting members in STC committee meetings.
- Quorum at STC committee meetings is established when the number of voting members present physically equals or exceeds half.

STCs are to

- Duty A: Review, conclude and report new and emerging research directions
- Duty B: Establish Policy Committees to develop ISIAQ policy papers on interested or emerging topics.
- Duty C: Review and select papers for ISIAQ flagship conferences - Indoor Air

An STC member shall be responsible for:

- Receiving assignment from STC Chairperson.
- Initiating and organizing Indoor Air conference sessions.
- Initiating, revising and contributing to ISIAQ policy papers.

Responsibilities of STC Chairperson

- Submit a yearly work plan to the ISIAQ secretary one month after the appointment. The work plan should cover all Duties A, B and C.
- Ensure the minimum number of committee members during the term of service.
- Organize at least two plenary STC committee meeting and if necessary additional meeting a year using webex conference calls, Skype or other means.
- STC chairperson or their representatives will attend the ISIAQ STC Chairmen meeting during the Indoor Air/Healthy Buildings conferences.
- Organize the STC committee meeting during Indoor Air/Healthy Buildings conferences. The STC committee meeting is open to all non-voting participants.
- Submit a yearly report to the ISIAQ secretary. The yearly report must cover all Duties A, B and C, and also a STC Performance Point calculation table.

Responsibilities of STC Secretary

- Prepare the STC meeting agenda at least one week prior to the meeting and meeting minutes at most one month after the meeting.
- Assist in communication with STC members and/or any other activities of an STC.

ISIAQ 2011 Annual General Meeting
6 June 2011 – 5:40 – 7:00 pm -- Austin Convention Center, 4th floor

ISIAQ's Annual General Meeting (AGM) will be held on Monday evening during the Indoor Air 2011 conference in Austin. The meeting will be chaired by ISIAQ's President, Dr. Richard J. Shaughnessy, of the University of Tulsa. Shaughnessy will present an overview of the Society's activities over the last year and a summary of some of the more important issues considered by the Board of Directors since the last AGM in October 2010. There will be ample time for ISIAQ Members to ask questions and make suggestions to the Board of Directors.

Agenda:

Call to Order
 Report of the Directors
 Presentation of the Treasurers' Report
 Presentation of the Financial Report
 Report of the Trustees
 Discussion of Old Business
 Healthy Buildings 2012, Brisbane, Queensland, Australia
 Discussion of New Business
 Indoor Air 2014
 Other matters as shall arise from the members
 Adjournment

**2010 Annual General Meeting:
 An ISIAQ first – AGM held via the Internet**

In 2010, the Board of Directors conducted the AGM via the world wide web. The meeting was held at two times 12-hours between the two in order to facilitate participation in all the ISIAQ regions: Europe, the Americas, and Asia-Pacific. There was good participation from all the regions, and the participants commented very favorably on the convenience of being able to attend the meeting via the Internet.

Professor Shin-ichi Tanabe, President of the ISIAQ Academy of Fellows, gathered a large group of students at Waseda University in Tokyo, together to participate in the meeting and sent us the photos below. Prof. Tanabe is seated at the far right in the photo at the left, with students during ISIAQ's 2010 Annual General Meeting.





HEALTHY BUILDINGS 2012

Brisbane, Queensland, Australia – 8 - 12 July 2012

Since its inception in 1988, the **Healthy Buildings** conferences have been held in various locations in Europe, North America and Asia, However, to date, no conferences have been held in the Southern Hemisphere. Australia has been experiencing a steady increase in interest in indoor air quality and healthy indoor environments over the last few decades. It is timely to hold the next Healthy Buildings conference in Australia. The city of Brisbane, in Queensland, is a great place for holding meetings/conferences, with its ample accommodation options, good climate and numerous opportunities for recreational activities nearby.

The dates for the conference are **8-12 July 2012** and although it will be winter in Australia, the weather is very pleasant, dry and sunny, with an average day time maximum temperature of 21°C (70°F), an average night time minimum temperature of 10 C (50 F), and a total average monthly (July) rainfall a very low 30 mm (1.2 inches). The conference organizers intend to present a social program with a truly Australian spirit, which would enable plenty of opportunities for interaction between the participants, while at the same time allowing for enjoyment of the subtropical ambience of outdoor Brisbane.

The conference will begin on Sunday evening with a Welcome Reception and Opening Session. Every morning (Monday through Thursday) will begin with a plenary session delivered by internationally-recognized experts, followed by a series of several concurrent technical sessions throughout each day. These sessions will reflect the full range of topics important to the field of indoor air sciences and health, including the interdisciplinary nature of our field. Technical sessions will include platform (oral) presentations, poster presentations, workshops and forums.

Workshop Proposals – NOW OPEN

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)

Please email workshop proposal(s) by September 30, 2011 to: Mrs. Jenny Bartsch
jennifer.bartsch@wki.fraunhofer.de

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.

More information is available at <http://hb2012.org/program/workshops/>

Indoor Air – The ISIAQ journal

ISIAQ's official journal, Indoor Air, began publication in 1991. Now, in celebration of 20 years of publication, Indoor Air has been highlighting some articles this year under the heading, "Commemorating 20 years of Indoor Air." Some of these were commissioned, others submitted and chosen for presentation as part of the series of articles put together of articles selected or solicited by former Editor Jan Sundell and current Editor Bill Nazaroff.

With this issue of the newsletter, we are beginning a practice of publishing the abstracts of the articles published in our journal. Our hope is

that for those of you who may not have the opportunity to glance through the journal in the print form or on-line, both benefits of ISIAQ membership, this handy collection of the abstracts may stimulate you to read the entire articles. You can always log in to our web site and then click on the journal icon (front cover) to gain access not only to the current issue but to all past issues of the journal.

We are proud to be affiliated with the journal and to be able to make it more accessible to our members through our relationship with the publisher, Wiley.

Indoor Air, Volume 21, Number 3 June 2011

Editorial

William W Nazaroff

Commemorating 20 years of Indoor Air

In *Metaphors We Live By* (University of Chicago Press, 1980), Lakoff and Johnson posit that 'metaphor is not just a matter of language... on the contrary, human thought processes are largely metaphorical.' Pinker expresses a similar view: 'metaphor is so widespread in language that it's hard to find expressions for abstract ideas that are not metaphorical' (*The Stuff of Thought: Language as a Window into Human Nature*, Viking, 2007). The role of metaphor in thought and language has been on my mind as I've been reflecting on how best to introduce this issue of *Indoor Air*, which features five articles commemorating the journal's 20th anniversary.

The research enterprise explores uncharted lands where new truths – rich, complex, multifaceted – are waiting to be discovered. Intrepid investigators prepare themselves for these journeys through years of study. They obtain support from benefactors, public or private. They assemble teams and necessary equipment. And then they venture into the wilderness. When they successfully return, the explorers report – in the pages of journals like *Indoor Air*– how they traveled, where they went, and what they found. Seminal research ventures far into the unknown, opening vast new spaces for subsequent exploration and development.

Clearly, metaphors are valuable teaching devices. An incompletely understood system can be mapped by inference and analogy to another that is better known so as to yield new insights. At the same time, by relying on connotation, the effectiveness of communication by metaphor is limited by culture and by previous experience. For example, my use of the metaphor 'research as exploration' draws on my family's century-long presence on the west coast of the United States. In California, history education is steeped in stories of Ferdinand Magellan, Christopher Columbus, and Lewis and Clark. Does this metaphor of 'research as exploration' resonate as well for those who were raised in Europe or in Asia?

Each issue of *Indoor Air* chronicles significant new discoveries about indoor environmental quality and health. In the first 20 volumes, from 1991 through 2010, we published 94 regular issues plus 11 supplements, 843 original or review articles, and 8931 pages. (Trust me. I counted them!) The authors who publish in *Indoor Air* have recorded substantial achievements that advance our understanding of indoor environmental conditions in nonindustrial buildings, the factors influencing those conditions, their significance for human health, and opportunities for improvement.

Continued on page 8

Continued from page 7

The five commemorative articles published in this issue are exemplars of their class and provide a perspective on indoor environmental research as a whole.

Research is a human enterprise. We strive to discern objective truths and to report those findings honestly and forthrightly. But worldviews, historical context, funding opportunities, and social priorities, among many other factors, strongly influence research goals. To understand where we are as a research community and how we might best proceed, it is helpful to have a close look at where we have been. The first article in this collection is a narrative account by *Indoor Air*'s founding editor, David Grimsrud, of the circumstances surrounding the journal's establishment and its early years. Although the history of *Indoor Air* begins in the late 1980s and early 1990s, there are important earlier histories that contributed seminally to the development of our international research community. One important history unfolded in Denmark, and the article by Finn Gyntelberg and Ib Andersen provides a compelling eyewitness account of that time.

Review articles, important in any scholarly community, are especially so in broadly multidisciplinary fields. Outstanding review articles do more than assemble key references and organize the presented information. They also provide a critical synthesis that teaches the reader more than might be learned by reading the original works. In the history of *Indoor Air*, we have published many strong review articles. One style of review is undertaken by a multidisciplinary team and follows structured procedural rules. Noteworthy examples from the journal's first two decades include the articles by Carl-Gustaf Bornehag et al. on building dampness and health (*Indoor Air* 11, 72, 2001), Pawel Wargocki et al. on ventilation and health (*Indoor Air* 12, 113, 2002), and Yuguo Li et al. on the relationship between building ventilation and airborne infection (*Indoor Air* 17, 2, 2007). Among the commemorative articles presented here is another review of this type, reporting an effort led by Jan Sundell and Hal Levin, which assessed the relationship between building ventilation rate and occupant health effects. This article is especially timely given societal concerns about anthropogenic climate change and the consequent, potentially ill-advised efforts to reduce building ventilation rates to save energy.

The other type of review article typically develops from efforts of one or a few scholars to synthesize a body of literature on a particular topic. Influential examples from the journal's first two decades include Peder Wolkoff's summary of volatile organic compounds (*Indoor Air* 5 Suppl. 3, 1, 1995), Charlie Weschler's review of indoor ozone (*Indoor Air* 10, 269, 2000), and Mark Mendell and Garvin Heath's review of indoor air quality in schools and its effects on student performance (*Indoor Air* 15, 27, 2005). In the present issue, Charlie Weschler distills the essence of what research over the past two decades has taught us about indoor air chemistry.

In May 2010, Geo Clausen gathered ten experienced researchers from the indoor air community for a daylong retreat north of Copenhagen. Through guided exercises, we examined the state of our research field and of our research community. That meeting provided inspiration and raw material for the fifth commemorative article in this issue, 'Reflections on the State of Research: Indoor Environmental Quality.'

The concept for publishing special articles to commemorate *Indoor Air*'s 20th anniversary was born at an editors' meeting in Syracuse, NY, during the Healthy Buildings 2009 conference. During 2010, his final year as editor-in-chief, Jan Sundell spearheaded the effort to transform that vision into reality. Additional commemorative articles are pending for publication during 2011. And, we are working with the publisher to have all of the commemorative articles available in a virtual issue on the journal's home page, in addition to appearing in a print issue.

These articles remind us that we can all take considerable pride in the work that we do to improve the state of knowledge about indoor environmental quality and health. This field of research is important, interesting, and difficult. One might be discouraged about the limited size of our community in relation to the scale of the challenges we face. However, it has always been that great discoveries are made by small and determined groups of explorers.

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Indoor Air, Volume 21, Number 3 June 2011**Commemorating 20 years of Indoor Air
Abstracts****D. T. Grimsrud - *Indoor Air: the first 10 years***

This paper recounts the first 10 years of the Indoor Air journal from the perspective of the founding editor. It represents personal recollections of the journal's founding and initial publication. It describes some of the amazing changes that have occurred since the decade of the 1990s when it was first published.

I. Andersen and F. Gyntelberg - *Modern indoor climate research in Denmark from 1962 to the early 1990s: an eyewitness report*

Modern, holistic indoor climate research started with the formation of an interdisciplinary 'Indoor Climate Research Group' in 1962 at the Institute of Hygiene, University of Aarhus, Denmark. After some years, other groups started similar research in Denmark and Sweden, and later – after the First International Indoor Air Symposium in Copenhagen 1978 – this research spread to many countries and today it is carried out globally by probably 2000 scientists. This paper recounts the history of Danish indoor climate research, focusing on the three decades from the early 1960s to the founding of the Indoor Air journal in 1991. The aim of this paper is to summarize what was learned in those earlier years and to call to the attention of researchers in this area the need of multidisciplinary research, mingling epidemiological fact-finding field studies with climate chamber studies and laboratory investigations.

J. Sundell, H. Levin, W. W. Nazaroff, W. S. Cain, W. J. Fisk, D. T. Grimsrud, F. Gyntelberg, Y. Li, A. K. Persily, A. C. Pickering, J. M. Samet, J. D. Spengler, S. T. Taylor and C. J. Weschler. - *Ventilation rates and health: multidisciplinary review of the scientific literature*

The scientific literature through 2005 on the effects of ventilation rates on health in indoor environments has been reviewed by a multidisciplinary group. The group judged 27 papers published in peer-reviewed scientific journals as providing sufficient information on both ventilation rates and health effects to inform the relationship. Consistency was found across multiple investigations and different epidemiologic designs for different populations. Multiple health endpoints show similar relationships with ventilation rate. There is biological plausibility for an association of health outcomes with ventilation rates, although the literature does not provide clear evidence on particular agent(s) for the effects. Higher ventilation rates in offices, up to about 25 l/s per person, are associated with reduced prevalence of sick building syndrome (SBS) symptoms. The limited available data suggest that inflammation, respiratory infections, asthma symptoms and short-term sick leave increase with lower ventilation rates. Home ventilation rates above 0.5 air changes per hour (h^{-1}) have been associated with a reduced risk of allergic manifestations among children in a Nordic climate. The need remains for more studies of the relationship between ventilation rates and health, especially in diverse climates, in locations with polluted outdoor air and in buildings other than offices.

C. J. Weschler - *Chemistry in indoor environments: 20 years of research*

In the two decades since the first issue of Indoor Air, there have been over 250 peer-reviewed publications addressing chemical reactions among indoor pollutants. The present review has assembled and categorized these publications. It begins with a brief account of the state of our knowledge in 1991 regarding 'indoor chemistry', much of which came from corrosion and art conservation studies. It then outlines what we have learned in the period between 1991 and 2010 in the context of the major reference categories: gas-phase chemistry, surface chemistry, health effects and reviews/workshops. The indoor reactions that have received the greatest attention are those involving ozone—with terpenoids in the gas-phase as well as with the surfaces of common materials, furnishings, and the occupants themselves. It has become clear that surface reactions often have a larger impact on indoor settings than do gas-phase processes. This review concludes with a subjective list of major research needs going forward, including more information on the decomposition of common indoor pollutants, better understanding of how sorbed water influences surface reactions, and further identification of short-lived products of indoor chemistry. Arguably, the greatest need is for increased knowledge regarding the impact that indoor chemistry has on the health and comfort of building occupants.

Indoor Air, Volume 21, Number 3 June 2011*ORIGINAL ARTICLES*

Abstracts

M. L. Fong, Z. Lin, K. F. Fong, T. T. Chow and T. Yao - Evaluation of thermal comfort conditions in a classroom with three ventilation methods

Abstract Thermal sensation is studied experimentally under mixing ventilation, displacement ventilation, and stratum ventilation in an environmental chamber. Forty-eight subjects participated in all tests under the same boundary conditions but different ventilation methods in the classroom. Thermal comfort analysis was carried out according to the designated supply airflow rate, room temperature, and relative humidity for the three ventilation methods. The thermal neutral temperature under stratum ventilation is approximately 2.5°C higher than that under mixing ventilation and 2.0°C higher than that under displacement ventilation. This result indicates that stratum ventilation could provide satisfactory thermal comfort level to rooms of temperature up to 27°C. The energy saving attributable to less ventilation load alone is around 12% compared with mixing ventilation and 9% compared with displacement ventilation.

O. Meisenberg and J. Tschiersch - Thoron in indoor air: modeling for a better exposure estimate.

Only recently, the radioactive gas thoron (^{220}Rn) and its decay products have been regarded as significant health risk in the indoor environment. This is because of new findings of increased thoron concentrations in traditional mud dwellings and considerations leading toward reduced action levels for natural airborne radionuclides. A model which describes the sources and sinks of thoron and its decay products should help to assess the indoor exposure. This work presents an extensive depiction of the influences of indoor conditions on the occurrence of these radionuclides. Measurements were performed in an experiment room and in mud dwellings in China and India. Mud even with an average ^{232}Th concentration was identified as a significant thoron source. The spatial distribution of the decay products proved to be homogeneous, which is in contrast to thoron gas. The prominent contribution of the unattached and attached decay product ^{212}Pb to the exposure was elaborated. The theoretically derived impact of air exchange and aerosol concentration, which determines the proportion of unattached decay products, could be confirmed. Transfer coefficients of the model were determined. The thoron model with these transfer coefficients predicts annual doses of almost 2 mSv for dwellers of traditional Chinese and Indian mud buildings, confirming the potential health impact of thoron.

Y. Saijo, A. Kanazawa, A. Araki, K. Morimoto, K. Nakayama, T. Takigawa, M. Tanaka, E. Shibata, T. Yoshimura, H. Chikara and R. Kishi - Relationships between mite allergen levels, mold concentrations, and sick building syndrome symptoms in newly built dwellings in Japan

This study investigated the possible relationships between exposures to mite allergen and airborne fungi with sick building syndrome (SBS) symptoms for residents living in newly built dwellings. We randomly sampled 5709 newly built dwellings in six prefectures from northern to southern Japan. A total of 1479 residents in 425 households participated in the study by completing questionnaire surveys and agreeing to environmental monitoring for mite allergen (Der 1), airborne fungi, aldehydes, and volatile organic compounds. Stepwise logistic regression analyses adjusted for confounders were used to obtain odds ratios (OR) of mite allergen and fungi for SBS symptoms. Der 1 had a significantly high OR for nose symptoms. *Rhodotorula* had a significantly high OR for any symptoms, and *Aspergillus* had significantly high OR for eye symptoms. However, the total colony-forming units had a significantly low OR for throat and respiratory symptoms. *Eurotium* had a significantly low OR for skin symptoms. In conclusion, dust-mite allergen levels and indoor airborne *Rhodotorula* and *Aspergillus* concentrations may result in SBS symptoms in newly built dwellings.

CONFERENCES: Past and Future

ASHRAE IAQ 2010

In November 2010, in Kuala Lumpur, Malaysia, ISIAQ co-sponsored the ASHRAE IAQ Conference, Airborne Infection Control - Ventilation, IAQ & Energy, Kuala Lumpur, November 10-12,

2010 Airborne Infectious Disease, Energy, and IAQ. The conference was well-attended with over 350 participants including a very large contingent from the local ASHRAE Chapter. There were numerous ISIAQ members actively participating in the conference including ISIAQ's Vice President for Research, Yuguo Li, and Academy of Fellows President Shin-ichi Tanabe. The conference was chaired by Chandra Sekhar of Singapore..

As at all ISIAQ co-sponsored conferences, ISIAQ Members received a significant discount on the registration fees.

SweSIAQ/ISIAQ Regional Conference on Indoor Environment

In 2010 a "Regional" ISIAQ sponsored Conference was held and coordinated by the Swedish Chapter of ISIAQ (SweSIAQ). The SweSIAQ/ISIAQ Regional Conference on Indoor Environment was held in Stockholm 2-3. December 2010. Approximately 55 attendees participated in the 2-day event. Many aspects of the indoor environment were presented with a focus on regional issues of concern and geared for practitioner use. The event provided a good model for future regional ISIAQ events. All attendees were made ISIAQ members as a function of attending the conference (based on registration fees).

Announcement:

Bioaerosols Conference

6th International Scientific Conference on Bioaerosols, Fungi, Bacteria, Mycotoxins in Indoor and Outdoor Environments and Human Health September 6 - 9, 2011, Saratoga Springs, New York, USA

Scientific program - and conference focus:

- Natural disaster, flooding, water damage and emergency response
- Advances in health outcome research, treatment, prevention and education
- Remediation and Mitigation – what are acceptable clearance criteria?
- Artwork and precious items cleaning and restoration
- Young Investigator Research
- Developing and Transitional Countries
- Novel concepts and approaches in patient diagnosis and care

Submit Abstract for:

- I. Health effects
- II. Exposure assessment
- III. Remediation, Mitigation, Building science
- IV. Global experience
- V. Prevention, Education & Control – Public Health
- VI. Special focus / Theme items

Learning Objective

At the conclusion of the conference, the participant will be able to:

- Discuss current data and new information on health effects, exposure, assessment, analytical methods, applied research, pathology, epidemiology, microbiology, prevention and mitigation of bioaerosol exposure;
- Recognize the importance of bioaerosol exposure and related adverse health effects;
- Develop a multi-disciplinary team approach for the recognition and management of bioaerosol exposure.

ISIAQ Members will receive a 10% discount off the regular registration fees.

More information at <http://bioaerosol.org>

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](#).

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