



ASHRAE *ASHRAE SINGAPORE CHAPTER*
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. SINGAPORE CHAPTER

Mailing Address: Bukit Merah Central, P.O. Box 0626, Singapore 911535

ASHRAE SINGAPORE CHAPTER DISTINGUISHED LECTURER TALK

Topic : **"International Ventilation and IAQ Standards"**

Presented By

Dr. Chandra Sekhar

*Associate Professor, Department of Building
National University of Singapore*

Date : **28th November 2008 (Friday)**

Time : **6.00 – 10.00 pm**

Venue : Meeting Room 1, Level 9

Address : NTU Alumni Club
11 Slim Barracks Rise
(Off North Buona Vista Road)
Singapore 138664
Tel: + 65 6777 1101
Fax: + 65 6777 1933

Register by email or fax before 20th November 2008

Registered ASHRAE Singapore Chapter members	Free of charge
Guests and Non-Members	SGD 30

*** Admission is by prior registration only. Priority shall be given to ASC members, and ASHRAE members. As seats are limited, members and guests are requested to register early to avoid disappointment.

* Voluntary donations to the ASHRAE Research Promotion Fund will be most welcome.

Programme: Registration - 6.00 pm – 6.30 pm
Buffet Dinner - 6.30pm – 7:30 pm
DL Talk - 7:30 pm – 9.30 pm

Application has been made to the Professional Engineers Board for PDU points



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Please contact the following personnel for clarifications:

On programme and registration matters: **Dr. Uma** [Email: uma@zeb-tech.com]

1) **Registration details:**

Name for Registration: _____

ASHRAE Membership No. : _____

ASC Membership No. : _____

PE Reg No. (for PDU) : _____

- Please complete the following in full

Organisation : _____

Designation : _____

Address : _____

_____ Postal Code : _____

Telephone/Mobile No. : _____ Fax No. : _____

Email : _____

Signature : _____ Date : _____

If you are an invited guest, please state the name of ASC member who invited you:

Invited Guest of: Member's Name: _____

ASC Membership No. _____



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ABOUT THE SPEAKER AND THE TOPIC

CHANDRA SEKHAR, Ph.D.
Department of Building
National University of Singapore, Singapore

Dr. Chandra Sekhar is currently an Associate Professor and Programme Director (M.Sc – Building Science) in the Department of Building at the National University of Singapore (NUS). He is also a Founding Director of Enhanced Air Quality Pte Ltd., a NUS Spin-off Company incorporated in June 2004, arising out of his research in the fields of indoor air quality (IAQ) and Energy. He has been an IAQ consultant in Singapore since 1993. He received his PhD in Mechanical Engineering from the University of Adelaide, Australia, and continued as a postdoctoral fellow at the same university until 1991 where he worked towards the continued development of energy efficient cooling and dehumidification systems. In 1992, he joined NUS as a Faculty and has since been teaching and conducting research in the areas of ventilation and indoor air quality, air-conditioning and ventilation systems, building energy analysis and has published about 150 papers in these areas in several international journals and conferences.



Dr. Sekhar is an editorial board member of Energy and Buildings journal (Elsevier) and International Journal of Ventilation and is a regular reviewer of articles for several international journals, such as, ASHRAE HVAC&R Research Journal and Transactions; Indoor Air; Energy and Buildings; Building and Environment; Energy. He was the recipient of The Enterprise Challenge award of the Prime Minister's Office, Singapore in 2004. He is actively involved in the development of local IAQ, ventilation and energy standards in Singapore. He is a member of the International Scientific Committee of the Healthy Buildings, Indoor Air, ROOMVENT and IAQVEC series of conferences and was the Technical Co-Chair and member of the organising committee of the Healthy Buildings 2003, the Seventh International Conference in Singapore in 2003.

In September 2005, Dr. Sekhar was elected as a Member of the International Academy of Indoor Air Sciences (IAIAS). He is an ASHRAE Fellow and member of International Society for Indoor Air Quality and Climate (ISIAQ) and Institution of Engineers, Australia (CPEng, IEAust). Within ASHRAE, he is currently a member of Environmental Health Committee (EHC), SSPC 62.1, SSPC 55, TC 2.1 and TC 4.3 as well as the CTTC Chairman of ASHRAE Singapore Chapter.

International Ventilation and IAQ Standards

Whilst research on ventilation and indoor air quality (IAQ) is ongoing and a better understanding of the impact of ventilation and IAQ on human comfort, health and productivity is continuously evolving, it may be argued that it is difficult to agree upon one international standard that is universally accepted. Most existing Standards/Guidelines stipulate criteria or requirements that are given as ventilation rates. However, some of these standards also include more than one procedure to address the issue of acceptable IAQ.

- Prescriptive Method : Minimum ventilation rates can be found in a table listing values for different types of space
- Analytical Method : Calculation of required ventilation rate on the basis of pollutant type, emission rates and acceptable concentration

All current and proposed Standards aim to deal with both HEALTH and COMFORT issues. This talk is an attempt to review some of the current international efforts in the development and review of ventilation and IAQ standards, such as ASHRAE, ISO and CEN standards.



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Map of the Venue

