



BIG energy seminar series

Addressing the scale and complexity of the global energy challenge.



INDOOR AIR QUALITY AND ENERGY EFFICIENCY: GETTING TO NETZERO WITHOUT STINKIN' UP THE JOINT

Building System Program Seminar Series

Andrew K. Persily, NIST, Gaithersburg

Thursday, February 17, 2011

5:00 p.m. – 6:00 p.m.

Engineering Center ECCR 1B51

Summary: Building designers, contractors, owners and managers have long been challenged with providing quality indoor environments at a reasonable energy cost. Current efforts to improve building energy efficiency, including goals of netzero energy use, are bringing more focus on these two objectives. While some see energy efficiency and indoor air quality as diametrically opposed, there are in fact many strategies that can help to achieve both ends. System design, construction and installation, commissioning and operation and maintenance are discussed as they relate to both indoor air quality and energy efficiency. The relationship between indoor air quality and energy efficiency is discussed first, primarily in terms of the impacts of ventilation and air distribution. A number of specific strategies that are currently being used or proposed to provide both improved indoor air quality and energy efficiency are then discussed including: increased envelope airtightness, heat recovery ventilation, demand controlled ventilation, enhanced particle filtration, gaseous air cleaning, contaminant source control, displacement ventilation, and improved system maintenance. Finally, some key issues are reviewed where the relationship between indoor air quality and energy efficiency can be more complex, such as hot/humid climates, poor outdoor air quality and natural ventilation.

Andrew K. Persily, Ph.D.

Dr. Persily works on indoor air quality and ventilation in commercial and residential buildings. His work includes the development and application of measurement techniques to evaluate airflow and air quality characteristics in a variety of building types, including large, mechanically ventilated buildings and single-family dwellings. The evaluation procedures include tracer gas techniques for measuring air change rates and air distribution effectiveness, contaminant concentrations measurements, and envelope airtightness. He is also involved with the development and application of multi-zone airflow and contaminant dispersal models.

Dr. Persily was a vice-president of the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) from 2007 to 2009, and is past chair of ASHRAE SSPC 62.1, responsible for the revision of the ASHRAE Ventilation Standard 62. He is a past chair of ASTM Subcommittee E6.41 on Air Leakage and Ventilation Performance and past vice-chair of subcommittee D22.05 on Indoor Air Quality. Dr. Persily's first two years at the National Bureau of Standards were as a National Research Council Postdoctoral Research Associate, working on air infiltration in homes and large buildings. He received the Department of Commerce Bronze Medal in December 1989 and Silver Medal in 2008, and was named Young Engineer of the Year by the D.C. Council of Engineering and Architectural Societies in 1990. He was named an ASTM Fellow in 2002 and an ASHRAE Fellow in 2004.

Dr. Persily earned his Ph.D. and M.A. from Princeton University and his B.S. from Beloit College.

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Recommended Parking: Euclid Avenue AutoPark