

Presentations Presented at Past CIAQ Meeting

Topic Categories

Research | Energy/IAQ | Communities | Pollutants | Green/Healthy Buildings | Ventilation/Humidity

Research

“Layered GAPTM Photo Catalytic Oxidation, PCO,” Oct. 17, 2007.

Dan Briggs, dbriggs@genesisair.com, (806) 745-7000.

Genesis Air/Government Scientific discussed the potential that Photo Catalytic Oxidation, or PCO, as an emerging technology in the HVAC industry has to significantly improve indoor air quality. PCO also has the potential to limit the intake of outdoor air with a significant energy savings over classical designs. This new layered GAPTM PCO — patents pending — methodology uses cost-effective, non-ozone producing UVC Germicidal Irradiation, in combination with titanium dioxide coated mesh, to aggressively oxidize and reduce all carbon-based VOCs, airborne mold, bacteria, viruses, and hydrocarbons found in indoor environments. Layered PCO methodology is categorized in ANSI/ASHRAE Standard 62.1 as an IAQ procedure, which allows the design professional the opportunity to chose an alternative to the prescriptive Ventilation Rate Procedure method. GAPTM technology can be used as a stand alone system or incorporated into existing or new HVAC systems.

“NCEMBT Program on Filtration and Air Cleaning,” April 19, 2006.

Dr. Douglas Kosar, dkosar@uic.edu, (312) 413-2646, <http://www.erc.uic.edu>; Dr. James Freihaut, (814) 863-0083, jdf11@psu.edu, <http://www.engr.psu.edu/ae/iec>; Dr. J. Zhang, (315) 443-1366, jszhang@syr.edu, <http://www.energysystems.syr.edu>. For more information on NCEMBT, visit <http://www.ncembt.org/index.html>.

The National Center for Energy Management and Building Technology, or NCEMBT, in conjunction with three of its university partners — University of Illinois at Chicago, Penn State University and Syracuse University — has a significant research program under way in filtration and air cleaning. Specifically, SU has completed an initial series of contaminant or particulate and VOC pull-down tests on six portable and two in-duct air cleaning devices in its existing environmental chambers.

“Building Assessment Survey and Evaluation Ventilation Data,” July 20, 2005

Dr. Andrew Persily, National Institute of Standards and Technology, (301) 975-6418, andyp@nist.gov.

Persily discussed his analysis of the ventilation data produced by EPA’s Building Assessment Survey and Evaluation, or BASE, study. EPA’s BASE study included a range of measurements in 100 randomly selected U.S. office buildings. Among other things, BASE characterized the ventilation systems and made selected measurements of ventilation performance. The National Institute of Standards and Technology analysis assessed ventilation performance parameters, such as outdoor air intake and supply airflow, produced a comparison of parameters determined by different methods and a comparison of parameters to design values and industry standards.

“Program Needs for Indoor Environments Research,” April 28, 2005.

John Girman, Senior Science Advisor, Indoor Environments Division, U.S. EPA, (202) 343-9317, girman.john@epa.gov.

Girman discussed the Indoor Environments Division’s document describing EPA’s research needs for the indoor environment. He also reviewed the development of the Program Needs for Indoor Environments Research, or PNIER, document. PNIER is a comprehensive document that addresses a wide range of indoor air quality and indoor environments topics. Visit <http://www.epa.gov/iaq/pdfs/pnier.pdf> for more information on PNIER.

“The NCEMBT Agenda on IEQ Research,” Oct. 20, 2004.

John Wimer, COO/National Center for Energy Management and Building Technologies, (703) 299-5633, jwimer@ncembt.org.

The National Center for Energy Management and Building Technologies, or NCEMBT, was established in 2003 by the National Energy Management Institute and the University of Nevada in Las Vegas, with support from EPA and the Department of Energy. Its research mission is to improve the efficiency, productivity and security in new and existing U.S. buildings. The center develops and disseminates synergistic and complementary solutions to issues involving energy management, indoor environmental quality and security.

“EPA’s ORD-IAQ Research Program,” Oct. 22, 2003.

Jim Jetter, Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, (919) 541-4830, jetter.jim@epa.gov.

In addition to background information on the National Risk Management Research Laboratory’s mission and organization, Jetter outlined the lab’s principal research areas, including: indoor source characterization; IAQ modeling; risk management; bio-contaminants; and building security. Jetter also discussed the lab’s IAQ research test house, chamber testing facility/capability; and their various evaluations, investigation and testing activities.

Energy/IAQ

“Reduced Energy Use through Reduced Indoor Contamination in Residential Buildings,” June 6, 2007.

Davor Novosel, Chief Technology Officer, National Center for Energy Management and Building Technology, (703) 299-5633, dnovosel@ncembt.org, <http://www.ncembt.org/index.html>

The information available to consumers on the effectiveness of air cleaners is limited, especially for the combined removal of VOCs and particulates. A standard method of test for the removal efficiency of air cleaning devices under such conditions is lacking, as well. This project evaluated six off-the-shelf portable and two in-duct air cleaning devices. The tested products utilize different technologies for gas and particulate removal including sorption, media filtration, ultraviolet-photo catalytic oxidation, or UV-PCO, electronic precipitation and air ionization. The potential effectiveness and energy benefit of using such devices to clean re-circulated air to decrease the outdoor air intake and reduce the ventilation-related energy costs are briefly discussed and compared.

Communities

“Communities in Action for a Renewed Environment,” Feb. 18, 2009.

Dennis O’Connor, OAR-ORIA, U.S. EPA, (202) 343-9213, Oconnor.Dennis@epa.gov.

O’Conner provided an overview of the Communities in Action for a Renewed Environment, or CARE, program; its mission; and opportunities for participation. The CARE approach is to foster collaborative work at the community level in: identifying potential sources of exposure to toxics; setting priorities for risk reduction; and create self-sustaining partnerships to improve the local environment.

“Update on Community Action for a Renewed Environment,” July 9, 2006.

Dennis O’Connor, OAR-ORIA, U.S. EPA, (202) 343-9213, Oconnor.Dennis@epa.gov. For more information about CARE, visit <http://www.epa.gov/care>.

Pollutants

“PCBs in Caulk,” Oct. 21, 2009.

Dr. John McCarthy, President of Environmental Health and Engineering, Inc., (800) 825-5343, DShore@eheinc.com, www.eheinc.com.

McCarthy discussed the management of risks from polychlorinated biphenyls, or PCBs, in building materials, particularly caulk. The manufacture of PCBs was banned by EPA in 1979. PCBs were used extensively in caulking materials produced before 1971. McCarthy reviewed its prevalence in schools, homes and commercial buildings, and the associated mitigation and remediation measures and costs. He noted that several forces are driving the need for the risk management of PCBs in building materials, including compliance with the Toxic Substances Control Act, public interest, litigation and building occupant and owner concerns. View EPA’s [news release](#) on this topic dated Sept. 25, 2009.

“Swine H1N1 Influenza A: Transmission of Flu Viruses in Indoor Air: HVAC System Protection Options,” June 3, 2009.

Steven Welty, CAFS, CIE, LEED AP, (703) 927-7532, greencleanair@aol.com.

Welty’s presentation addressed the generation and life stages of infectious droplets and droplet nuclei; how flu viruses are distributed and circulated within office buildings; the conditions that affect virus longevity; and the effectiveness of the technologies and systems available to sterilize or capture flu viruses.

“Ozone Impacts in the Indoor Environment,” Feb. 13, 2008.

Greg Brunner, IED, U.S. EPA, (202) 343-9052, brunner.gregory@epa.gov.

Ozone is a common outdoor air pollutant that can migrate indoors where it can react with chemicals commonly found in the indoor environment and form harmful and irritating by-products. The sources for these reactive indoor chemicals are ubiquitous and include occupants, building materials and cleaning products. This presentation presents highlights from a growing body of literature on this topic, including several analyses recently completed by scientists at the Lawrence Berkeley National Laboratory with data from EPA’s Building Assessment Survey and Evaluation, or BASE, study of indoor air quality in office buildings.

“Radon ASD Moisture Study,” Oct. 17, 2007.

Brad Turk, Environmental Building Sciences Inc., TurkEBSI@aol.com.

Turk of Environmental Building Sciences and the Southern Regional Radon Training Center at Auburn University presented findings from an exploratory study on the impact of active soil depressurization, or ASD, on moisture levels in basements. ASD systems are commonly installed to control indoor radon levels. The field study, conducted in three Pennsylvania homes, found that the systems caused significant seasonal reductions in basement moisture and changed air flow patterns within the houses. Topics on the conceptual modeling, technical approach and analysis of data were discussed. The presentation is included in the minutes for this meeting.

“Radon in Large Buildings,” April 21, 2004.

David Wilson, Oak Ridge National Laboratory, (865) 435-9890.

Wilson outlined the scientific basis of Oak Ridge National Laboratory’s, or ORNL’s, non-residential protocol and the lessons learned. Since 1988, ORNL’s radon program has collected more than 80,000 radon measurements and performed hundreds of mitigation in large nonresidential buildings. Analyses and modeling of the testing, diagnostic and mitigation data led to the development of a proposed nonresidential protocol to guide testing and approaches for successful mitigation.

“Anti-microbial Pesticide Use in HVAC Systems, and Strategy for Controlling and Inhibiting Indoor Mold Growth,” April 23, 2003.

Tracy Lantz, (703) 308-6415, lantz.tracy@epa.gov; Laura Bailey, Office of Pesticide Programs, U.S. EPA, (703) 308-6212, bailey.laura@epa.gov.

Lantz outlined the Office of Pesticide Program’s, strategy on anti-microbial pesticide use in HVAC systems. Bailey outlined the Office of Pesticide Program’s strategy for controlling and inhibiting indoor mold growth.

Green/Healthy Buildings

“Building Air Quality-An Update,” Oct. 15, 2008.

Ed Light, certified industrial hygienist, (301) 924-6264, Elight@building-dynamics.com.

Trends in indoor air quality investigations were considered, along with more recently published work addressing resolution of occupant complaints. Also, implementation of the pioneering EPA/National Institute for Occupational Safety and Health Guide since its 1991 publication was reviewed.

“GREENGUARD’s Indoor Air Quality Product Certification and Labeling Programs,” June 6, 2007.

Carl Smith, CEO, GREENGUARD Environmental Institute, (800) 427-9681, csmith@greenguard.org, www.greenguard.org.

This presentation discussed the basic requirements that a low-emitting products certification/labeling program must address. The GREENGUARD Certification Program for Children and Schools/Cleaning Products was used as a case study. Indoor air quality product certification and labeling programs must fulfill a number of requirements in order to pronounce a product or group of products as low emitting. Fundamental principles must be established, including: testing methodology; emission criteria; laboratory qualification; sample selection; frequency of testing; control measures; and accountability.

“Indoor Environmental Quality Report, and National Building Information Model Standard,” Feb. 7, 2007.

Nanne Davis Eliot, project manager, National Institute of Building Sciences, (202) 289-7800, ext.125, neliot@nibs.org.

The U.S. Access Board contracted with the National Institute of Building Sciences, or NIBS, to develop an IEQ report on the factors that limit access to buildings for individuals with sensitivities to chemicals and electromagnetic fields. The IEQ report addresses: operations and maintenance; design of “Cleaner Air Rooms”; design and construction; and building products and materials. The CIAQ presentation covered the entire report, with a focus on building design, construction, products and materials. For more information, visit <http://www.nibs.org>.

"IEQ and Kennedy Space Center," Jan. 18, 2006.

Bill Brodt, NASA Facilities Engineering and Real Property Division, (202) 358-1117, Brodt.William@nasa.gov.

Brodt discussed NASA's program to increase the health and productivity of building occupants and related current NASA activities. Sub-topics included sustainability, life-cycle facility costs, best practices, maintenance guidance and NASA's Reliability Centered Maintenance program. Brodt also outlined the Kennedy Space Center's joint base operating systems contract approach to indoor air quality.

"Healthy School Environments Assessment Tool," Oct. 19, 2005.

Bob Axelrad, Indoor Environment's Division, U.S. EPA, (202) 343-9315, axelrad.bob@epa.gov.

Axelrad described and demonstrated a new software tool designed to help school systems conduct voluntary self-assessments of their schools for all environmental, health and safety hazards and track the status of facility conditions school by school. The software is available on EPA's Healthy School Environments Web site at <http://www.epa.gov/schools>. The tool also includes content from other Federal agencies, including the National Institute for Occupational Safety and Health Safety Checklist Program for Schools, the Consumer Product Safety Commission's playground safety guidance, the Centers for Disease Control/DASH's School Health Index, and the Department of Education's Office of Safe and Drug-free Schools Crisis Planning guidance, among others.

"Creating a More Healthful, Less Toxic Built Environment," Feb. 24, 2005.

Dr. Arthur Weissman, President/CEO Green Seal, Inc., (202) 872-6400, aweissman@greenseal.org, www.greenseal.org.

Weissman outlined Green Seal's origins and mission and discussed its focus on promoting the purchase and production of products, services, purchasing choices and operations to reduce the impact on the environment. Weissman discussed the relationship between toxins, non-toxic alternatives, the importance of standards, and worker health and safety and Green Seal's product certification program. He also described Green Seal's green facilities and audit/assistance programs.

"HUD's Weatherization Plus Health Protocol," July 21, 2004.

Ellen Taylor, Office of Healthy Homes and Lead Hazard Control, (202) 755-1785.

The Weatherization *Plus* Health, or WPH, program utilizes the existing structure of weatherization programs to implement an enhanced weatherization service in combination with improvements for healthier residential living conditions and higher overall quality of service. The WPH adds two levels of service to core weatherization programs — "do no harm" and "improve IEQ."

Ventilation/Humidity

“ASHRAE’s Ventilation Standard 62.1,” June 11, 2008.

Three presentations on ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality were made: an overview by **Andy Persily** (National Institute of Standards and Technology; andyp@nist.gov) on the standard; on the Ventilation Rate Procedure, or VRP, by **Dennis Stanke** (Trane; dstanke@trane.com); and on the Indoor Air Quality Procedure, or IAQP, by **Chris Muller** (Purafil; cmuller@purafil.com). During the course of the discussion, **Alexandra Sullivan** (Sullivan.alexandra@epa.gov) of EPA’s Office of Atmospheric Programs/Climate Protection, gave a brief description of the Energy Star program and noted that one of the most commonly asked questions concerned the IAQP and its application. Subsequent to the meeting, **Ryan Colker** of ASHRAE provided a list of resources on using ASHRAE 62.1.

“DOE’s Humidity Control Technology Showcase Trailer: 2003 Experiences With ORNL and 2004 Opportunities for CIAQ,” Jan. 21, 2004.

Douglas Kosar, University of Illinois at Chicago, (312) 413-2646, dkosar@uic.edu.

“Revision of ASHRAE Standard 62: Ventilation for Acceptable Indoor Air Quality,” July 23, 2003.

Dr. Andrew Persily, National Institute of Standards & Technology, (301) 975-6418, andyp@nist.gov.

Persily discussed the revisions to ASHRAE Standard 62. His overview included: the “State of the Standard” and Addenda; related efforts, such as smoking, space design guide and Standard 62.2; Addendum 62n, Ventilation Rate Procedure; and ASHRAE indoor air quality applications.