

**Minutes ASHRAE MEETING – San Antonio****TC 2.3 - Gaseous Air Contaminants/Removal Equipment  
TC Meeting**

Tuesday – June 26, 2012  
 13:00 - 15:30 (1:00 – 3:30 PM)  
 Grand Hyatt Hotel: Texas B (4)

The meeting attendee list is as follows:

Last Name	Name	Member Status	Position	Present
<b>Total Voting Members = 13 out of 14 in attendance</b>				
Bayer	Dr. Charlene W. Bayer, PhD	V	Secretary	P
Burroughs	Mr. H.E. Burroughs	V	ALI Coordinator	P
Flom	Mr. Michael C. Flom	V	Member	P
Grzywacz	Ms. Cecily M. Grzywacz	V-NQ	Member	P
Hafendorfer	Mr. Brian J. Hafendorfer	V	Member	P
Listvan	Dr. Marilyn A. Listvan, PhD	V	Publications Chair	P
Lull	Mr. William P. Lull	V	Member	P
Middlebrooks	Mr. Matt Middlebrooks	V	Chair	P
Muller	Mr. Christopher O. Muller	V	Member	P
Owen	Ms. Kathleen Owen	V	Research Chair	P
Roseberry	Mr. Jeffrey Roseberry	V	Webmaster	P
Stanley	Mr. W. Brad M. Stanley	V	Vice Chair	P
Tronville	Dr. Paolo M. Tronville, PhD	V-NQ	Standards Chair	P
Zhang	Dr. Jianshun S. Zhang, PhD	V	Member	-
<b>Total Non Voting Members = 6 (1 provisional)</b>				
Baker	Mr. Wane Baker	NV		P
Campion	Dr. Christopher L. Campion, PhD	NV	Member	P
Choi	Dr. Kyung-Ju Choi, PhD	NV	Program Co-Chair	P
Kerr	Dr. Caroline M. Kerr, PhD	NV	Handbook Chair	P
Krafthefer	Mr. Brian Krafthefer	NV	Provisional Member	P
Lau	Dr. Josephine Lau, PhD	NV	Member	P
Mathur	Mr. Ashish Mathur	NV	Member	P
Schaaf	Mr. David A Schaaf, Jr	NV	Program Co-Chair	P
<b>Total Visitors = 9</b>				
Freeman	Mr. Bill Freeman	None	-	P
Haas	Mr. Daniel Haas	None	-	P
Leusasseur	Ms. Paula J. Leusasseur	None	-	P
Matler	Mr. David Matler	None	-	P
Nirlo	Ms. Elena Nirlo	None	-	P

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Last Name	Name	Member Status	Position	Present
Nurezyk	Mr. Mark Nurezyk	None	-	P
Seyffer	Mr. Charles Seyffer	None	-	P
Stanfel	Ms. Christine Stnfel	None	-	P
Stone	Mr. Christopher Stone	None	-	P

**Summary Motions**

#	Motion	Vote
1	Barney Burroughs moved to accept the minutes from the Chicago meeting. Cecily Grzywacz seconded.	PASSED: 12-0-0 CNV Chair not voting
2	Cecily Grzywacz moved that the TC approve the current draft of Handbook Chapter 11, including changes agreed upon at this meeting, for submission to ASHRAE Handbook Committee. Marilyn seconded.	PASSED: 12-0-0 CNV Chair not voting
3	Marilyn Listvan moved that those who have purchased ASHRAE documents and CDs be able to open these documents on any of their devices and upon multiple platforms including both Windows and Apple products. Matt Middlebrooks is to write a letter to the cognizant ASHRAE personnel expressing the TC's concerns and request. Charlene Bayer seconded.	PASSED: 12-0-0 CNV Chair not voting
4	Paolo Tronville moved that the TC Chair write a letter to the cognizant ASHRAE personnel expressing the TC's concerns about the decrease of information in the on-line handbook version as compared to the former DVD/CD version and the loss of searching functionality.	PASSED: 12-0-0 CNV Chair not voting
5	Paolo Tronville moved that Nick Agopian remain voting member and Brad Stanley alternate to MTG-EEC. Bill Lull seconded.	PASSED: 12-0-0 CNV Chair not voting

**Summary Action Items**

#	Action Item	Owner
1	Assessment of the interest of ALI in the development of a course on filtration, particularly one that may be internationally applicable.	Barney Burroughs
2	White papers to be written for submission for inclusion on website, publication in EHC IAQ column or other publications to provide educational information about gas-phase filtration	TC Committee members, particularly the manufacturers
3	A letter to be written to the cognizant ASHRAE personnel expressing the TC's concerns and request that those who have purchased ASHRAE documents and CDs be able to open these documents on any of their devices and upon multiple platforms including both Windows and Apple products.	Matt Middlebrooks

#	Action Item	Owner
4	A letter to be written to the cognizant ASHRAE personnel expressing the TC's concerns about the decrease of information in the on-line handbook version as compared to the former DVD/CD version and the loss of searching functionality.	Matt Middlebrooks
5	Preparation of a response to 62.1 about the use of additivity in the use of the IAQP.	Chris Muller, Charlene Bayer, Wane Baker
6	Review of TG2 HVAC Security Guideline 29 to ascertain accuracy of gas-phase filtration recommendations	Brian Krafthefer and Barney Burroughs

*Meeting Minutes Begin*

1. Call to order. Introduction of guests and members. Identify & Reporting from ASHRAE liaisons.
  - a. Meeting called to order by Matt Middlebrooks at 1:00 PM.
  - b. 12 voting members present not including the Chair.
2. Review as needed and Approval of previous meeting minutes from Chicago, IL
  - a. **Barney Burroughs moved to accept the minutes**
  - b. **Cecily Grzywacz 2<sup>nd</sup>**
  - c. **Passed 12-0-0 CNV, Chair not voting**
3. Subcommittee Reports
  - a. Handbook - *Subcommittee Chair Gemma Kerr*
    - i. Chapter 11 due to ASHRAE Handbook Committee next week. New draft was prepared for this meeting incorporating the revisions from Chicago meeting. Additional minor revisions were made at this handbook subcommittee meeting.
    - ii. **Cecily Grzywacz moved that the TC approve the current draft of Handbook Chapter 11, including changes agreed upon at this meeting, for submission to ASHRAE Handbook Committee.**
    - iii. **Marilyn 2<sup>nd</sup>**
    - iv. **Passed 12-0-0 CNV, Chair not voting**
    - v. Chapter 46 due in two years.
  - b. Membership - *Subcommittee Chair Matt Middlebrooks*
    - i. TC has 14 voting members
    - ii. July 1 four members rotating off – Barney Burroughs, Marilyn Listvan, Jeff Rosebury, and Chris Muller
    - iii. Four members rotating on -- Gemma Kerr, Josephine Lau, Chang-Seo Lee, and David Schaaf
    - iv.

- c. Planning - *Subcommittee Chair Brad Stanley*
- i. Outcomes and Recommendations from Planning Subcommittee Meeting
    1. Developing a series of white papers. Manufacturers submit ones that they already have for the committee to revise as required. Other members to prepare white papers.
    2. Website ideas discussed to move development forward quickly
    3. Discussion of other committees in which TC members need to be or are involved. Liaison reports to be presented at future meetings. Roll-call similar to that used by 62.1 suggested. Committee does not have a volunteer to act as point person as ozone expert to the various committees. A volunteer is needed.
    4. A table is being prepared of the research ongoing and proposed by the TC.
- d. Professional Development Coordinator - *Barney Burroughs*
- i. Nothing happening in the area of filtration at ALI. Training on the IAQ Design Guide, which was dropped at this meeting and may or may not be revived again. Barney is willing to explore the development of a course on filtration if the committee is interested. There are international venues, i.e. India, where the course could be presented.
  - ii. Bill is willing to help Barney on gas phase filtration program preparation.
  - iii. Barney will investigate the ALI interest level.
  - iv. Suggestion made to include the actual numerical savings of the IAQP and a major component of the IAQP it would be helpful.
- e. Program - *Subcommittee Chair Kyung-Ju Choi*

Type	Title	CoSponsor	Chair	When	Status
Forum	Filtration and Air Cleaning Position Paper	TC 2.4	Barney Borroughs	San Antonio	<b>Not Submitted</b>
Seminar	Is the filter performance related to your life?	TC 2.3 cosponsor	KJ Choi	San Antonio	<b>Not Accepted</b>
Seminar	Filter performance for Ozone	EHC, 62.1	Brad Stanley	San Antonio	<b>Not Submitted</b>
Conf Paper	Contaminants in Hotel Room Exhaust Air	TC 2.4	Brad Stanley	Wednesday Noon	<b>Accepted</b>
Type	Title	CoSponsor	Chair	When	Due Date
Forum	Filtration and Air Cleaning Position Paper	TC 2.4	Barney Borroughs	Dallas	<b>Aug 13, 2012</b>
Seminar	Filtration: Friend or Foe	TC 2.3 cosponsor	KJ Choi	Dallas	<b>Aug 13, 2012</b>
Seminar	Filter performance for Ozone Jeff Siegel, Kathleen Owen, Jensen Zhang, Chris Muller Brad Stanley	EHC, 62.1	Brad Stanley	Dallas	<b>Aug 13, 2012</b>
Seminar	Air Cleaning Standards	2.4, 2.9	Chris Muller	Dallas	<b>Aug 13 2012</b>

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	Update 145.1/2 Update – Chris Muller 2.9 Standard Update – Matt help 2.4 Standard Update – Charlie help ISO TC 142				
Seminar	Cross Contamination in Energy Wheels	5.5, 8.12	Charlene Bayer	Dallas	<b>Aug 13, 2012</b>
Seminar / Conference Paper	Research Mini-conference: Ongoing research on 145.1 by Jensen Zhang By-products from PCO by Ramses Kropp		Matt Middlebrooks	Denver	
Seminar	Air Cleaning Standards – Example Test Results	2.4, 2.9	Chris Muller	Denver	
Forum	Should the VRP be Held to the Same Standards as the IAQP?	62.1	Charlene Bayer	Denver	<b>Chris to ask 62 for co-sponsorship</b>
	<b>Below ones slated for later or discard</b>				
Seminar	Desiccant wheel Odor Removal		Nick Agopian	Later	
Seminar	Sorbents as Air Cleaners			Later	
Conference Paper	IAQP Case Study Documentation	TC 2.4	Barney Burroughs & Charlene Bayer	Later	
	UVPCO (Hugo Destailats, LBL) 1457 Report (Ramses, U of W)			Later	
	TG 2 (Building Security) – Where does filtration fit in		Matt Middlebrooks	Later	<b>Later</b>

f. Publication – *Subcommittee Chair Marilyn Listvan*

- i. Marilyn Listvan passed out a list of special publications in pipeline from publication committee meeting. Ones in gray are the ones coming out in the next six months.
- ii. There is a desire for case studies as a special publication – could be put in handbook or as special publication. ASHRAE Wiki: [wiki.ashrae.org](http://wiki.ashrae.org). You can click on a term and comment if you think that a term is incorrectly given. It automatically pulls from all standards. When writing definitions, please check to ascertain existing definitions rather than re-writing. You also can ask for definitions to be added. There are more than 7000 definitions in the Wiki.

- iii. **Marilyn Listvan moved that those who have purchased ASHRAE documents and CDs be able to open these documents on any of their devices and upon multiple platforms including both Windows and Apple products. Matt Middlebrooks is to write a letter to the cognizant ASHRAE personnel expressing the TC's concerns and request.**
  - iv. **Charlene Bayer 2<sup>nd</sup>.**
  - v. **Passed 12-0-0 CNV Chair not voting**
  - vi. **Action Item: Matt Middlebrooks to write a letter to the cognizant ASHRAE personnel expressing the TC's concerns and request that those who have purchased ASHRAE documents and CDs be able to open these documents on any of their devices and upon multiple platforms including both Windows and Apple products.**
  - vii. ASHRAE wants members to use the handbook on-line so no longer selling the DVD/CDs in the bookstore, which had a very powerful search engine. On-line it is very difficult to search on-line and ineffective. The on-line version you have to search chapter by chapter, one at a time. Also no instructions in the on-line version on how to search. Very limited searching capabilities. Also do not have the highlighting ability. Also a problem with the graphics. It is not full-screen and difficult to read.
  - viii. **Paolo Tronville moved that the TC Chair write a letter to the cognizant ASHRAE personnel expressing the TC's concerns about the decrease of information in the on-line handbook version as compared to the former DVD/CD version and the loss of searching functionality.**
  - ix. **Marilyn Listvan 2<sup>nd</sup>**
  - x. **Passed 12-0-0 CNV Chair not voting**
  - xi. **Action Item: Matt Middlebrooks to write a letter to the cognizant ASHRAE personnel expressing the TC's concerns about the decrease of information in the on-line handbook version as compared to the former DVD/CD version and the loss of searching functionality.**
  - xii. **Passed 12-0-0 CNV Chair not voting**
  - xiii. ASHRAE has scanned in quite a few of the old project reports. These can be downloaded for free if they have been scanned. The TC appreciates their scanning in of the old documents and making them available to the interested members.
- g. *Research - Subcommittee Chair Kathleen Owen*
- i. David John is the new RAC liaison.
  - ii. RP-1457 and RP-1557 project updates
    - 1. RP-1557 by Zhang – project on-schedule;
    - 2. RP-1457 by Kropp. There is concern about him getting to the by-product analysis prior to project end.
  - iii. Research Chairs' Breakfast: RAC reported 19 new projects awarded. New RTAR form. If already have it started on the new form, please

continue using it. Have your cost estimates reasonable. Do not make the RTARs too long. Too many RTARs are coming back basically requesting a WS. You can submit a WS without submitting an RTAR. Innovative research grants. All rejected as not being innovative enough. Cannot be something that a TC would do anyway. They still would like innovation proposals.

h. Standards - *Subcommittee Chair Paolo Tronville*

- i. Update of standards within scope of 2.3 was made.
- ii. MTG-EEC Guideline dividing up into two documents – particles & gases under purview of new GPC. The MTG is well balanced and TC wants this to continue through the GPC committee.
- iii. **Paolo Tronville moved that Nick Agopian remain voting member and Brad Stanley alternate to MTG-EEC.**
- iv. **Bill Lull seconded.**
- v. **Passed 12-0-0 CNV Chair not voting**
- vi. Bill Lull discussed that by moving forward in the MTG and GPC, TC2.3 will be backing into a rating system. Bill suggests that we begin doing that in 145.2 rather than it being in the Guideline. Classification system set up in 145.2 related to performance is what Bill is suggesting. Others commented that it is the intent of the GPC to develop a determination, calculation method and not an experimental method. Goal is not to develop a method of test, but to reference test methods. Performance divided by the energy usage and then will get an “energy usage performance rating”. Over time loading required to get particulate energy usage and rating – not done by 52 currently.
- vii. USGBC has a specific working group for IAQP for LEED 2012. When it goes to public review, TC should review and send out pertinent comments. Dennis Stanke stated that in his article he did not mean to condemn the IAQP, but as an example of how one person might use the IAQP. Dennis thought that the article would stimulate 62.1 and TC2.3 to submit comments to get the IAQP to something that designers are willing to use. He has been submitting comments to 62.1 to try to improve the IAQP so that it is useable.
- viii. Paolo Tronville would like anyone interested in Lifecycle Cost Calculation to submit his/her name to participate in the ISO committee (ISO TC 142) being initiated to work on this.
- ix. TG2 meeting: ASHRAE chapter 57 and Guideline 29 for **HVAC Security**. Methods for controlling catastrophic events. TC2.3 should look at that guideline for correctness. Will be taking a reaffirming vote and whether or not to revise. It does not currently have a home because it was originally done outside of the TC structure. TCs 2.3 and 2.4 could provide help to the committee. A good portion of the document has to

do with gaseous and particulate filtration. Nick is a voting member of this committee.

- x. **Action Item: Brian Krafther and Barney Burroughs to review the guideline for accuracy in area of gas-phase filtration.**
  
- i. Website - *Subcommittee Chair Jeff Roseberry*
  - i. Progress has been made. Still trying to revive the original material so if anyone has it, please send to Jeff. Planning to replicate the TC2.9 website because it is considered to be very good. NAFA group has offered to host it again. We need to have a backup copy that will be held by the committee so that it is not lost again in the future. Should have an initial website soon that is more user friendly in posting and writing.
  
- 4. Report from TC liaisons.
  - a. Bill Lull reported from 8.12. 1456 guide.
  - b. EHC and GPC84 (TC5.5). TC needs to work with these committees on cross-contamination issues.
  - c. Committee to be formed to prepare a response to 62.1 about the use of additivity in the use of the IAQP. Chris Muller, Charlene Bayer, and Wane Baker to do this.
  
- 5. New Business
  - a. Letters of appreciation will be sent if requested
  - b. Review and follow the guidelines for the ASHRAE logo.
  
- 6. Agenda suggestions for the Winter Meeting in Dallas
  
- 7. Adjournment
  - a. Meeting adjourned at 3:30.
  
- 8. Business/Votes Conducted Electronically Between ASHRAE Meetings
  - a. Co-Sponsorship of TC5.1 WS1614  
Motion submitted to TC2.3 July 31, 2012 for electronic vote with final vote requested no later than August 13, 2012. Voting on motion:  
**“Matt Middlebrooks moves that TC 2.3 co-sponsor the submission of Work Statement 1614 ‘Evaluation of Effectiveness of UV Systems’ by TC 5.10” (see attachments). As Chair of TC 2.3 I believe we should be involved with the submission and execution of this work statement because of the air cleaning claims made by the suppliers of these technologies (UV Kitchen Hoods – claiming to break down materials on the fly, not just on surfaces). Whether or not the systems perform as claimed I believe it is important to promote valid testing of air cleaning technologies and claims and get that kind of information**



**to the public. Any negative votes should include explanation and/or comments.”**

## ASHRAE MEETING MINUTES – SAN ANTONIO

### TC 2.3 - Gaseous Contaminants/Removal Equipment Handbook Sub-Committee Meeting

Monday, June 25, 2012

4:15-6:00 p.m.

Convention Center, Room 003A (River Level)

The meeting was chaired by Gemma Kerr (Handbook Chair for TC 2.3). Participants introduced themselves. Present were:

#### Name

Gemma Kerr (Chair)  
Nick Agopian  
Dan Haas  
Brian Krafthefer  
Paula Levasseur  
Bill Lull  
Ashish Mathur  
Jeff Roseberry  
David Schaaf  
Sheldon Jeter (Liaison)

TC 2.3 is presently responsible for 2 Handbook chapters:

- HVAC Applications Chapter 46 – *Control of gaseous indoor air contaminants* (2011)
- Fundamentals Chapter 11 – *Air Contaminants* (2013, submission due July 1, 2012)

#### Chapter 11

The draft distributed before the meeting contained all of the changes agreed in Chicago, and responses to some review comments. The sections dealing with particulate contaminants were reviewed by the TC 2.4 Handbook Committee on June 23, and corrections identified and approved.

The changes in the gaseous contaminant sections of the draft were discussed and some minor edits agreed on. When discussions were complete, the committee voted in favor of Gemma taking the draft, including all corrections identified in San Antonio, to the TC to ask that committee to approve submission to the ASHRAE Handbook Committee.

## Chapter 46

HVAC Applications liaison Sheldon Jeter said that he would like to see us add example calculations of concentration to the chapter (in both sets of units). Adding spreadsheet material or an installation video to the electronic version of the chapter was also discussed.

Gemma reported that she has a text file containing all of the control material (and the associated references) removed from Chapter 11. The committee needs to review this material before Dallas so that we can decide what parts to include in the new Chapter 46.

Brian Krafthefer reported that he had written a review of Chapter 46. He agreed to forward the review to Gemma (this has been done). Gemma will distribute this to the committee in advance of Dallas.

There was no new business.

The meeting was adjourned at 5:55 pm.

**ASHRAE MINUTES – San Antonio**  
**TC 2.3 - Gaseous Contaminants/Removal Equipment**  
**Research Subcommittee Meeting**  
Sunday 6/24/12

1. Welcome
2. Introductions
  - A. Sign-In: Attendee list at end of minutes
3. Review of Minutes from Chicago - Jensen's name is misspelled.
4. RAC Report (Liaison TC 2.3 – David John) The liaison has changed to David John, who just started, and could not be with us. Notes from research chair breakfast (David attended) are lower in this file.
5. Presentations/Up-Dates on Current Research Projects
  - A. 1557-RP “Evaluation Lab Comparison of Relative Performance of Gas Phase Filtration Media at High and Low Challenge Concentrations.” [PMC - Matt Middlebrooks (chair), Bill Lull, Nick Agopian, and Paolo Tronville]  
P.I. Jianshun (Jensen) Zhang presented his PMS report in abbreviated form. A new MS student will work on this project toward completion of his thesis. Questions from Nick A. (particle size), Vijay A. (experimental parameters), some discussion arose about distribution of the sizes given in the chart, Paula explained that there is an ASTM 1635 (?) test method to observe that. Bill L reminded us that the plan was to compare High vs. Low concentration – NOT – comparing one media to another.
  - B. 1457-RP “By-product Production from Photocatalytic Oxidation Associated with Indoor Air cleaning Devices” – Marc Anderson University of Wisconsin. [PMC-Kathleen Owen (Chair), Gemma Kerr, Matt Middlebrooks, Marilyn Listvan, Charlene Bayer]  
Ramses Kropp presented his update and promised to send both slides and diagrams of PCO units to the PMS. KO to send Ramses information on Denver presentations in the Research Track in case he wants to submit a paper; an abstract is due in September, with a full paper following in February of 2013.
6. Work statements & RTARs: status updates – there was a lot of lively and useful discussion on many of the ideas that are in the works. Much progress made toward getting ideas ready to write.
  - A. 1579-WS Testing and Evaluation of Ozone Filters for Improving IAQ. Nick Agopian (PES chair), Bill Lull, Aflal Rahmathullah, Ashish Mathur, and Gemma Kerr volunteered to serve on the PES. ~~Leon Alevantis of California Department of Public Health~~, will represent EHC on the PES/PMS as they will co-sponsor.

Leon is no longer available – will be working with Pawel Wargocki, Ph.D. as EHC representative. Committee met today as a group, addressed all the points in the review, and will have a conference call in 11 days, should be able to submit to the Chair by two weeks.

B. 1625-RTAR Application of Indoor Air Quality Procedure: Charlene Bayer, Nick Agopian. Paolo Hasn't been worked on – 62 wants to cosponsor, and is now interested in IAQP.

7. Proposed RTARS: status updates

A. "Field performance of typical gas-phase air cleaning technologies over service life". Working Group to work on this: Bill Lull, Brad Stanley, Paula Levasseur, and Marilyn Listvan.

Add Ashish Mathur. Brad discussed how he is generating a spreadsheet to collect information from manufacturers as to what they know about lifetime. (Bill Lull called it a Standardized Database – available for cross comparison – described how more fact finding (survey customers) is needed before generating an RTAR). Discussion arose of writing an RTAR to do the fact finding portion or as a Phase I.

B. Cost of Ownership – ventilation vs IAQ. A big buzzword is cost of ownership, do we want to look at this with regard to cost savings, IAQP? What is the value of the energy savings (ROI) and the total cost of ownership for gas-phase filters in an implementation of the IAQP? Champion: Paula Levasseur with Nick, Jeff. (will break down into smaller projects)

Paula: until application of IAQP – doesn't see a pathway to generate an RTAR, begin with case studies, requested additional volunteers. Bill cautions to avoid doing double effort with 1491's cost analysis. Add Paolo Tronville. Idea still holds interest, but RTAR work is on hold for input.

C. Sorbents as Air Cleaners" - Use of 145.1 "test rig" to study ability to regenerate desiccants Matt Middlebrooks, Nick Agopian, Deepak (also of TC8.12)

No update. Matt welcomed an offline discussion. Bill offered to share his copy of RP-475 to interested parties. This was subsequently discussed Monday in 8.12 and Mr. Lull decided to drop the idea for 2.3 because the consensus in 8.12 was that this is the type of work that should be done by the manufacturer now that 145.1 and 145.2 are published.

D. Conduct a demo of the IAQP in a highly monitored and high profile facility. Champions – Barney Burroughs and Charlene Bayer update for alternate building's proposal that was written

Barney wrote it up, awaiting further communication. Will be a URP, proposal has been written up but not as RTAR. Work underway. Paula to seek additional funding. 2.3 research can ignore.

E. Evaluating air cleaner technologies/devices for treating formaldehyde. Champion – Jeff with help of Chang Seo Lee, Bill Lull, Paula Levasseur, Gemma Kerr

Jeff suggests opening the scope, Charlene supported this as a pathway toward funding. Kathleen will assist Jeff with RTAR formatting. Connection with Nick's 1559, and he cautions that RAC would not be open to a range of projects that look at contaminants. Kathleen took Bob Ajemian's name off the interested person list after hearing at 5.10 that he is not coming to ASHRAE.

F. Round Robin Testing of ASHRAE 145.2. Champion Chang-Seo Lee, Gemma, Chris Campion

Chang Seo Lee needs to be communicated with to determine if she will still champion.

G. Kitchen Hood RTARs (from another committee with our folks helping) - Bob Ajemian. Several people offered to help especially on the 2nd one. RTAR will be evaluating UV lights for kitchen hood exhaust: 1) Characterization of kitchen exhaust; 2) Fundamental Mechanisms taking place

Keep it open, get Brian Krafthefer in touch with Bob Ajemian – follow up after the research meeting. Kathleen attended 5.10 and found out that the RTAR is actually now a WS almost headed out for bid (2 weeks). Bob is no longer involved. I got the name of the PES chair and emailed him and Brian to put them in touch. If the WS is something related to us, hopefully Brian will be able to be on the PMS (5.10 will welcome our involvement, but did not know we existed).

8. Updates from Research Subcommittee Chairs Breakfast – This breakfast takes place on Monday so notes were added after the meeting.

- a) New liaison is David John. He looks forward to working with us. Because David only got the liaison job, Mike Vaughn sat in as our temporary liaison.
- b) Big note – ASHRAE’s call for research papers for Denver. New track, should be 25% of papers.
- c) RAC reports that 19 new projects were awarded, currently 62 active projects of which 11 are winding down, 6 conditionally approved TRPs possibly ready for bid this fall. New RTAR form (use for anything you haven’t started yet). Push to get realistic cost estimates. They are looking for more RTARS, numbers are down. We discussed the problem of RSC wanting WS level detail in RTARS. Mike Vaughn will talk to RAC about this – several groups complained.
- d) Mike Vaughn will send us the current RTAR/WS list by email.
- e) WS can be done without doing RTAR first.
- f) Revisions to research manual. One change is to the project analysis sheet. Updated Criteria A&B. Added text for URP (unsolicited research proposals). Papers due by 9/24/12 for Denver.
- g) Innovative Research Grants: IRG – 5 proposals received, all rejected mostly for not being innovative enough. They want “out of the box” ideas.

9. Meeting adjourned

10. After the meeting, EHC approached Matt/Charlene, wants us to go through their list to see what we’d be interested in. Matt/Charlene will send KO their list.

Attendance List (34)

**MEETING AGENDA**  
**TC 2.3 - Gaseous Contaminants/Removal Equipment**  
**Standards Subcommittee Meeting**

Monday, June 25<sup>th</sup> 2012, 6:00-8:00 p.m.

Henry B. Gonzalez Convention Center, Room 008A (River Level), San Antonio, TX, USA

The meeting was called to order by Chair Paolo Tronville. Present were:

**Name**

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- 1) Paolo Tronville (Chair)
- 2) Nick Agopian
- 3) Charlene Bayer
- 4) Keith Chesson
- 5) Kyung-Ju Choi
- 6) Mick Flom
- 7) Bill Freeman
- 8) Dan Haas
- 9) Gemma Kerr
- 10) Brian Krafthefer
- 11) Paula Levasseur
- 12) Bill Lull
- 13) Ashish Mathur
- 14) Matt Middlebrooks
- 15) Kathleen Owen
- 16) Jeff Roseberry
- 17) Brad Stanley

**1) Update on standards within scope of ASHRAE TC 2.3**

- a) GPC 27P “Procedures for measurement of gases in indoor environments” - *Bill Lull*  
- The guideline is making slow progress. The aim is to complete a draft by January 2015, and have a public review draft ready by January 2016.
- b) ASHRAE Std. 145.1-2008 “Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media” – *Kathleen Owen*  
- This standard is in an odd position because it was slated for revision before the committee became an SSPC. The situation now is that a more in-depth review is being done than would have previously been possible. The 145 committee’s effort is currently focused on the 145.1 revision.
- c) ASHRAE Std. 145-2 “Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices” - *Kathleen Owen*  
- There has been no action, see above.

**2) ASHRAE SPCs/SSPCs/TCs/TGs/TRGs activities**

- a) MTG Energy Efficiency Classification of General Ventilation Air-Cleaning Devices – *Brad Stanley*  
- Web conferences are being used to make progress. The Eurovent method of classification for particulate filters has not been accepted. Instead it was chosen Monroe Britt’s approach based on the watts/gram rationale. For gas phase filtration, one can use the capacity from the 145.2 Standard to classify. For combination filters one can use the average from the 52.2 curve plus

capacity from 145.2. ASHRAE may be asked to approve a guideline on this subject, and this might lead to gas phase filters being dropped (the TC will not have any influence on a GPC's decisions). How the rating for gas phase filters is dealt with in future will depend on the vote regarding a GPC.

- b) TC 2.4 "Particulate Air Contaminants and Particulate Contaminant Removal Equipment" – *Gemma Kerr*
  - Standard 52.2, which is under continuous maintenance, hopes to publish a new edition in 2012. Changes have been approved to the MERV table, and to the humidity range during the test, and specifications for particle counters have been added. Rewriting will take place over the summer, and the document will go out for public review in the fall.
- c) TC 2.9 "Ultraviolet Air and Surface Treatment" – *Matt Middlebrooks*
  - i) SPC 185.1 "Method of Testing UVC Devices for use in air handling units or air ducts to inactivate airborne microorganisms"
    - This has been out for public review, the review comments have been dealt with, and the document is being resubmitted to ASHRAE. Publication should take place soon.
  - ii) SPC 185.2 "Method of Testing Ultraviolet Lamps for Use in HVAC&R Units or Air Ducts on Irradiated Surfaces"
    - The public review draft is not yet complete, but should be ready soon.
- d) TC 9.11 "Clean Spaces" – *Matt Middlebrooks*
  - There are no standards, but several research projects. One is on demand-controlled ventilation for laboratories, there are others on pressurization. The TC seldom deals with gas phase filters. However, they are publishing a book which will include material on gas phase filters. Matt is to be a reviewer.
- e) SSPC 62.1 "Ventilation and IAQ High Rise Buildings" – *Charlene Bayer*
  - The IAQ Procedure is under threat. Dennis Stanke has written an article highlighting several problems, and IAQP is being subjected to more scrutiny and more requirements than the ventilation rate procedure. When addendum J (dealing with sections 6.3 and 6.4 of the standard) comes out, we need to be very vigilant and submit comments. The good news is that the 62.1 people now realize that TRG4- IAQP exists, and hopefully this will help to keep the IAQP alive. The US Green Building Council next issue will allow use of the IAQP, and this will also help. On another front, there has been an interpretation request regarding recirculation of toll exhaust. The verdict is that this is not allowed without a change in the definition of exhaust, which is being considered. There is also a proposal to allow buildings to shut down HVAC systems when they are unoccupied.
- f) SSPC 62.2 "Ventilation and IAQ Low Rise Buildings" – *Barney Burroughs*
  - There was no report

### 3) Information Exchange

- a) AFS – *KJ Choi*
  - The Fall Conference will be held October 15-18, 2012 at the Embassy Suites Airport in Philadelphia, PA
  - The Annual Conference will be held May 6-9, 2013 in Bloomington (Minneapolis), MN
- b) ASTM D22.05 "Air Quality" SC "Indoor Air" – *Chris Muller*
  - There was no report
- c) ASTM D28.04 "Activated carbon" SC "Gas Phase Evaluation Tests" – *Brad Stanley*
  - The committee is focusing on comparing carbons for cleaning mercury from air in power plant flues.
- i) D6646 - 03(2008) "Standard Test Method for Determination of the Accelerated Hydrogen Sulfide Breakthrough Capacity of Granular and Pelletized Activated Carbon"
  - There was no report
- d) CEN/TC144 "Tractors and machinery for agriculture and forestry" – *Paolo Tronville*



- There was no report
- i) EN 15695-2:2009 “Agricultural tractors and self-propelled sprayers - Protection of the operator (driver) against hazardous substances - Part 2: Filters, requirements and test procedures”
  - There is a strong need to revise this standard because of mistakes in the current version, but there are presently no resources to carry this out.
- e) CEN/TC 195 “Air filters for general air cleaning” WG 5 “Gas phase filters”– *Paolo Tronville*
  - This committee is not active, they are waiting for TC 142 to produce documents.
- f) CEN/TC 346 “Conservation of cultural property” WG 4 “Environment”– *Chris Muller*
  - There was no report
- g) CEN/TC 386 “Photocatalysis” – WG2 “Air Purification” – *Paolo Tronville*
  - This committee is producing a series of standards for different contaminants. Some of these are being used and issued by ISO/TC 206 (see below).
- h) ISO/TC 22/SC7/WG3 “Air and oil filters” – *Paolo Tronville*
  - i) ISO 11155-2: 2009 “Road vehicles - Air filters for passenger compartments - Part 2: Test for gaseous filtration”
    - The work this committee has been delayed by the economic crisis, and the committee process is not well organized.
  - i) ISO/TC 142 “Cleaning Equipment for Air and Other Gases” WG8 “Gas-phase air cleaning devices” – *Matt Middlebrooks*
    - i) DIS 10121-2 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 2: Gas Phase Air Cleaning Devices (GPACD)” (FDIS due April 1<sup>st</sup> 2012, risk of cancellation if late)
      - This is the equivalent of Standard 145.2. It is expected to be ready for the formal vote later this summer. The cancellation will occur next September if no action is taken by the project leader.
    - ii) DIS 10121-1 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 1: Gas Phase Air Cleaning Media (GPACM)” (Public enquiry ends October 3<sup>rd</sup> 2012)
      - This document is the equivalent of Standard 145.1, but includes a broader range of media. It is now out for vote. Feedback has been requested from the US TAG. Matt is coordinating comments.
    - iii) US Technical Advisory Group (TAG) to ISO/TC 142
      - Membership of the US TAG is also open to people not affiliated to a company. The Advisory Panel role is to answer technical requests in the area of gas-phase cleaning media and devices. New experts can be included to enrich participation in the US TAG.
  - j) ISO/TC146 “Air quality” /SC6 “Indoor air” – *TBD*
    - This committee is active, with more than 30 standard methods
  - k) ISO/TC 205 “Building environment design” – *TBD*
    - i) ISO 16814:2008 “Building environment design - Indoor air quality - Methods of expressing the quality of indoor air for human occupancy”
      - This committee has been trying to set up rating of gas-phase air cleaning devices by sensory panels. Their standard is not being used.
  - l) ISO/TC 206 “Fine ceramics”/WG 37 “Test methods for photocatalytic materials”
    - i) ISO 22197-x:2007 “Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for air-purification performance of semiconducting photocatalytic materials (see ISO TC 386 above)
      - (1) Part 1: Removal of nitric oxide (2007)
        - There was no report
      - (2) Part 2: Removal of acetaldehyde (2011)
        - There was no report
      - (3) Part 3: Removal of toluene (2011)

- There was no report
- (4) Part 4: Removal of formaldehyde (DIS)
  - There was no report
- (5) Part 5: Removal of methyl mercaptan (DIS)
  - There was no report
- (6) Part 6: Removal of formaldehyde under indoor lighting condition by test chamber method (WD)
  - This is of interest to TC 2.3 (the removal of formaldehyde by air-cleaners RTAR).
- m) ISO/TC209 “Cleanrooms and associated controlled environments” – *Chris Muller*
  - i) ISO 14644-8:2006 “Classification of airborne molecular contamination” (under revision)
    - There was no report
  - ii) ISO/DIS 14644-10 “Cleanrooms and associated controlled environments - Part 10: Classification of surface chemical cleanliness”
    - There was no report
- n) ITRI (Taiwan) – *Chris Muller*
  - There was no report

#### 4) Old Business

- a) Protocol for Evaluation of Portable Air Cleaners (NRC Canada)
  - Three US experts and one Canadian expert are in the process of being appointed to ISO/TC 142 WG11 which has adopted this document.
- b) Life Cycle Cost Calculation Guideline/Standard
  - LCC is linked to cost of ownership. It is not the same as energy labeling. We are not ready to form an MTG or write a document on this subject. The subject is also bigger than just considering the filter. Those present wanted to keep this item on the Agenda. Paula and Paolo are interested to start working on it.

#### 5) New Business

- a) Information exchange and coordination between ASHRAE SSPC 145 and ISO/TC142/WG8
  - i) ISO/PWI 10121-3 “Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 3: Classification system for assessing the performance of gas-phase air cleaning devices for general filtration”
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  - ii) ISO/PWI 10121-4 “Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 4: Field equivalent test method(s) for assessing the performance of gas-phase air cleaning devices for general ventilation”
    - This item was proposed by Japan. It is a laboratory method using field-level concentrations.

#### 6) Adjourn

The meeting was adjourned at 7:45 pm