

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING
ENGINEERS, INC.
1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400**

TC/TG/MTG/TRG MINUTES COVER SHEET

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/MTG/TRG No. 2.4 DATE 6/28/2011

TC/TG/MTG/TRG TITLE Particulate Air Contaminants and Removal Equipment
DATE OF MEETING June 28, 2011 LOCATION Montreal

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Phil Winters	7/1/2009	Charlie Seyffer	7/1/2010	A total of 33 people were in attendance for this meeting.
James Hanley	7/1/2009	Charlie Kern	7/1/2008	
Eric Brodsky	7/1/2008	David Matier	7/1/2007	
Mark Renn	7/1/2010			
Bruce Mc Donald	7/1/2010			
Tom Kuehn	7/1/2008			
Marilyn Listvan	7/1/2007			
Paolo Tronville	7/1/2007			
H.E. (Barney) Burroughs	7/1/2009			
Monroe Britt	7/1/2010			
Bob Burkhead	7/1/2010			
KJ Choi	7/1/2009			
Carolyn (Gemma) Kerr	7/1/2007			
Stephen Nicholas	7/1/2009			
Chris Peart	7/1/2009			

DISTRIBUTION

All Members of TC/TG/MTG/TRG plus the following:

TAC Chairman:	Charles Wilkin, PE (cbw200@comcast.net)
Section Head	Brian Fricke (frickeb@oml.org)
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Research – Iain Walker (iswalker@lbs.gov) Special Pubs – John Clark (jaclark@kfi-eng.com)
Manager Of Standards	Stephanie Reiniche (sreiniche@ashrae.org)
Manager Of Research & Technical Services	Mike Vaughn (mvaughn@ashrae.org)

ASHRAE MEETING MINUTES – Montreal
TC 2.4 - Particulate Contaminants/Removal Equipment
Main Committee Meeting

Tuesday, June 28, 2011 3:30 – 6:00 p.m. Hilton – Fontaine Salon G (L)

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1. Call to order (Phil Winters, Chair)
 - a. Agenda Review – **Attachment 1**
2. Introduction of guests and members
 - a. ~33 total attendance at meeting
3. Roll call (Don Thornburg)
 - a.

Member	Pres	Abs	Member	Pres	Abs
Phil Winters (Chair)	X		Robert Burkhead	X	
Jim Hanley (V.Chair)	X		KJ Choi	X	
Eric Brodsky (Handbook)	X		Charlie Kern		X
Charles Seyffer		X	Gemma Kerr	X	
Mark Renn (Research)	X		Tom Kuehn	X	
Bruce McDonald (Standards)	X		David Matier		X
Marilyn Listvan (Publications)	X		Stephen Nicholas	X	
Paolo Tronville – (International)	X		Chris Peart	X	
Barney Burroughs (ALI)	X				
Monroe Britt	X				
			Totals	15	3
					18

NV Members/Officers

Tom Justice (Membership)
 Don Thornburg (Secretary)
 Al Veeck (Webmaster)

Present: 15 voting members (including 1 international) – We have a quorum
 KJ Choi had to leave early
 18 Corresponding members/visitors/guests

4. Welcome and Opening Comments (Phil Winters)
 - a. Paperless Meeting – Minutes are sent via email to the Voting Members and Corresponding Members on record. No other papers other than the sign-up sheets.
 - b. Please initial the information on the sign-in sheets or add your information as needed. Any corrections need to be done on the ASHRAE web site by you.
 - c. This is the Main TC meeting and it is mostly a review of Subcommittee Reports, so be at those meetings for the long discussions.

- d. Some input from the TC Chairs' meeting:
 - i. CEC concerns about quality of some speakers (added to New Business)
 - ii. Session Chairs and Reviewers are needed for Chicago, 2012
 - iii. All TCs have frustrations with MBO. TC 2.3/2.4 approach is great.
 - iv. It is acceptable to post draft minutes, so long as it's clear they are in draft format.
 - v. ASHRAE's President will send letter to your employer thanking you for your participation in ASHRAE. Letter will go out in July to "Committee members who have served ASHRAE during the 2010-11 Society year".

- 5. Particle Party Announcement (Phil Winters):
 - a. Where/When: Angelo's Restaurant, 7pm tonight

- 6. Phil is "Retiring" as chairman of TC 2.4 and was recognized by ASHRAE and TC 2.4 for his excellent leadership.

- 7. Approval of Last Meeting Minutes (Las Vegas, February 2011): (Don Thornburg)
 - a. **Moved by Mark Renn, 2nd by Stephen Nicholas**
 - b. **Vote to approve: 12-0-2-4-18 (Yes-No-Abstain-Absent-Tot) Chair Not Voting (CNV) and Tom Kuehn**

- 8. Record of Votes since last meeting (Don Thornburg)
 - a. **Letter Ballot for the RTAR for Residential Filters & IAQ (T Justice)**
 - i. **Approved: 13-0-5-4-18 (Yes-No-Abstain-Absent-Tot)**
 - b. **Letter Ballot for the approval of the Final Report for RP-1466 – Calibration Device (Kuehn)**
 - i. **Approved: 15-0-3-3-18 (Yes-No-Abstain-Absent-Tot) CNV**

- 9. Subcommittee Reports:
 - a. **Planning Subcommittee (Jim Hanley)**
 - i. First meeting was on Monday from 8-10am.
 - 1. How do we make our liaisons more effective
 - 2. How can we get better visibility with the ASHRAE Program committee
 - 3. Power point presentation for 2.4 is a possibility
 - ii. **Motion to accept the Planning Subcommittee report**
 - 1. **Moved by Stephen Nicholas, 2nd by Marilyn Listvan**
 - 2. **Vote 12-0-2-4-18 (Yes-No-Abstain-Absent-Tot) CNV and Jim Hanley Abstained for his report**
 - iii. **PLANNING SUBCOMMITTEE REPORT IS ATTACHED.**
 - b. **Membership Subcommittee Report (Tom Justice)**
 - i. 6 people are rolling off, 6 are rolling on
 - ii. Jim, Don, Tom et al
 - iii. Volunteers to help mentor new folks coming on
 - 1. Phil Winters, Don Thornburg, Bob Burkhead, Mark Renn, Tom Kuehn
 - iv. **Motion to accept Membership Report**
 - 1. **Moved by Gemma Kerr, 2nd Eric Brodsky**
 - 2. **Vote: 13-0-1-4-18 (Yes-No-Abstain-Absent-Tot) CNV**

v. MEMBERSHIP SUBCOMMITTEE REPORT IS ATTACHED.**c. Research Subcommittee Report (Mark Renn)**

- i. RP-1360 How do filter change during life...is our active research project
 1. On time and underway
- ii. Cosponsoring 1306 with 9.6
 1. TC 2.4 has 3 members on the PES
- iii. One active RTAR
 1. Phil took over for Christine as PES Chair
- iv. ASHARE thinks we need to send in the disposition report in on 1466 from the PES Chair, Jim Kubokawa
 1. Mark Renn to verify with Jim Kubokawa
- v. Tom Justice and Brian (PGI) to work on one of the 2 topics brought up by Jeff Siegel
- vi. Ian Walker our research liaison is rolling off this meeting.
- vii. **Motion to accept Research report**
 1. **Moved by Bruce McDonald, 2nd by Barney Burroughs**
 2. **Vote to accept report 12-0-1-5-18 (Yes-No-Abstain-Absent-Tot) CNV**

viii. RESEARCH SUBCOMMITTEE MEETING MINUTES ARE ATTACHED.**d. Standards Subcommittee Report (Bruce McDonald)**

- i. See attached subcommittee minutes for details.
- ii. Action Items
 1. Zied Driss to apply for official liaison to SSPC 170
 2. Al Veeck is going to talk to the Chair and V Chair of 62.1, 62.2, 90.1, 170, 189.1 to see if they would be interested in filtration help on their committees
 3. 52.2 needs a vote by Letter Ballot for the letter to users of their “own” version of 52.2 – it should come from the new VC of 52.2
- iii. New item, not in Standards minutes
 1. Guideline 26 paperwork is done and going into ASHRAE by Bruce.
- iv. **Motion to accept Standards report**
 1. **Moved by Bob Burkhead, 2nd by Eric Brodsky**
 2. **Vote to accept report 13-0-1-4-18 (Yes-No-Abstain-Absent-Tot) CNV**

v. STANDARDS SUBCOMMITTEE MINUTES ARE ATTACHED.**e. Program Subcommittee Report (Stephen Nicholas)**

- i. A way to get an item on to the program is to submit it as a Conference Paper. It is on a different time schedule (9 months in advance), but guaranteed to be on if it meets the schedule. Conference paper is not as rigorous as a Technical paper, 8 pages single spaced maximum and single blind reviewed.
- ii. Evaluation forms need to be filled out when attending the programs to give AHSRAE feedback.
- iii. **Motion to accept Program report**
 1. **Moved by Mark Renn, 2nd by Gemma Kerr**
 2. **Vote to accept report 12-0-2-4-18 (Yes-No-Abstain-Absent-Tot) CNV and Stephen Nicholas abstained as it was his report**

iv. PROGRAM SUBCOMMITTEE MINUTES ARE ATTACHED.

- f. **Webmaster Report** (Al Veeck)
 - i. www.nafahq.org is the direct link to the TC 2.4 web site, but it can also be accessed through the ASHRAE web site.
 - ii. Chair acknowledged this was the first TC Chairs breakfast we did not get grief for having a broken website – Thank you Al Veeck
 - iii. Can we add a publications/bibliography page on the web site to find info on particle filtration as a learning tool? Marilyn to send it to Al.
 - iv. **Motion to accept Webmaster report**
 - 1. **Moved by Stephen Nicholas, 2nd by bob Burkhead**
 - 2. **Vote to accept report 13-0-1-4-18 (Yes-No-Abstain-Absent-Tot) CNV**
- g. **Handbook Subcommittee Report** (Eric Brodsky)
 - i. Proofs of Chapter 28 should be to us in the fall.
 - ii. Spent a little time on Chapter 11 as there are particle items/issues in this chapter and we need to make sure the information is consistent.
 - iii. **Motion to accept Handbook report**
 - 1. **Moved by Gemma Kerr, 2nd by Mark Renn**
 - 2. **Vote to accept report 13-0-1-4-18 (Yes-No-Abstain-Absent-Tot) CNV**

iv. HANDBOOK SUBCOMMITTEE MINUTES ARE ATTACHED

- h. **Publications Report** (Marilyn Listvan)
 - i. Al Veeck published “Who is MERV” in ASHRAE Insights
 - ii. ASHRAE starting a WIKI for terms and terminology
 - iii. Andy Pursly has a journal column and needs topics of approximately 1500 words
 - iv. **Motion to accept Publications report**
 - 1. **Moved by Bruce McDonald , 2nd by Paolo Tronville**
 - 2. **Vote to accept report 12-0-1-5-18 (Yes-No-Abstain-Absent-Tot) CNV**

v. PUBLICATIONS SUBCOMMITTEE MINUTES ARE ATTACHED**10. Reports from other TC liaisons**

- a. None

11. Old Business

- a. MTG-Energy Efficiency Classification (EEC) (Christine Sun)
 - i. Meeting held today
 - ii. Membership issues covered
 - iii. ASHRAE will have info/minutes, etc. posted on a MTG web page.
 - iv. Conference calls will be held generally before and after all ASHRAE meetings
 - v. The group has a scope, but no specific and output defined at this point.
 - vi. TC 2.4 should designate a member and an alternate

1. **Motion to accept Monroe Britt as the designated representative to MTG-EEC and Ken Snider as the alternate for TC 2.4**
 - a. **Moved by Marilyn Listvan, 2nd by Barney Burroughs**
 - b. **Vote to accept 12-0-2-5-18 (Yes-No-Abstain-Absent-Tot) CNV and Monroe abstained since he is the nominee**

12. New Business

- a. ASHRAE is looking at requiring speakers to pay to attend ASHRAE conferences. It came about due to professors not wanting to be recorded and the solution turned into potentially requiring all speakers to pay. We are not sure if it is still being considered.
 - i. **Motion that TC 2.4 oppose any attempt to charge speakers to attend the AHSRAE Conference by Marilyn Listvan, 2nd by Chris Peart**
 - ii. **The Motion failed with a vote of 4-5-5-4-18 (Yes-No-Abstain-Absent-Tot) CNV**
- b. Deaths in the industry Joe Jones (Purolator) and Dr. Melvin First.
 - i. Also, Dick Rivers wife passed away
 - ii. The committee condolences to all
- c. Public review on SPC 170 is coming out.
- d. HVAC Design Manual has been revised
- e. Conference Exhibition Committee (CEC)
 - i. If a speaker gets below 3.5 out of 5.0 on the score, they will give them training. No input on how this will be carried out.
 - ii. CEC is asking for input on the scoring form and how can it be improved?
 1. Form is very simple to get comments
 2. Any suggestion, please contact Jim or Phil

Speaker #1	Rating: Poor → Excellent				
	1	2	3	4	5
Oral Presentation					
Graphical Presentation					
Technical quality					
Free of Commercialism	<input type="radio"/> Yes		<input type="radio"/> No		

13. Motion to adjourn at 6:00pm

- a. **Made by Marilyn Listvan, 2nd by Stephen Nicholas**
- b. **Vote Unanimous**

Respectively submitted,
 Don Thornburg
 TC 2.4 Secretary
 Meeting date: June 28, 2011
 Minutes submitted: August 15, 2011

ATTACHMENTS

Agenda

**TC 2.4 Particulate Contaminants/Removal Equipment
Main Committee Meeting
Montreal, Tuesday June 28th, 2011, 3:30-6:00p
Hilton Bonaventure – Fontaine Salon G (Lower level)**

- 1. Call to order..... Phil Winters
- 2. Introductions
- 3. Roll call Don Thornburg
- 4. Welcome and opening comments Phil Winters
- 5. Particle Party..... Phil Winters
- 6. Approval of Las Vegas Minutes..... Don Thornburg
- 7. Record of votes taken since Las Vegas..... Don Thornburg
- 8. Subcommittee Reports
 - a. Planning Subcommittee Report..... Jim Hanley
 - b. Membership Subcommittee Report..... Tom Justice
 - c. Research Subcommittee Report..... Mark Renn
 - d. Standards Subcommittee Report..... Bruce McDonald
 - e. Program Subcommittee Report..... Stephen Nicholas
 - f. Web Master..... Al Veeck
 - g. Handbook..... Eric Brodsky
 - h. Publications..... Marilyn Listvan
- 9. Reports from other TC liaisons
- 10. Old Business
- 11. New Business
 - a. Misc Announcements (Conferences, Awards, etc)
- 12. Adjournment

ATTACHMENTS

TC 2.4 Planning Subcommittee Meeting

Monday, June 27, 2011, 8:00 – 10:00 a.m., (H) Fontaine Salon F (L)

1. Call to order and Introductions
 - a. Reason for the meeting as this is the first is to allow the members to informally work together to set the plan for the direction of 2.4.
2. Review draft agenda
 - a. Agenda items are not the TC reports, but a brief update of status and milestones. Item 4 is for where we are going. Item 5 is or old MBO objectives.
3. Subcommittee issues/problems/milestones
 - a. Handbook – Eric Brodsky
 - i. No issues. Good participation.
 - ii. Chapter 28 is our focus, but there are particulate issues with TC 2.3's Chapter 11.
 - b. Membership – Tom Justice
 - i. No issues. 105 voting and corresponding members. Good mix of users, manufacturers, general interest.
 - ii. We need stronger contact with other committees that involve filtration
 - iii. At a minimum we need to reach out to 55, 62.1, 62.2, 90.1, 170, 180, and 189.1. Bring it up at Standards subcommittee.
 - iv. Phil has a email chain to on “how to become a liaison”
 - c. Program – Steve Nicholas
 - i. No program in several meetings. All have been rejected.
 - ii. ASHRAE is dropping the Themes, but still will have “tracks” for the programs
 - iii. The more specific the topic, the better the chance of it being rejected. Make them broader...
 - iv. Leed, Green, Sustainability and Health will make it
 - v. Practical applications, case studies, lessons learned
 - d. Publications – Marilyn Listvan
 - i. We need to get the word out and ASHRAE wants articles now...
 - ii. Could we look at all Program submittal issue it for an article – especially if it is rejected?
 - iii. Insights, ASHRAE Journal, etc.
 - iv. What happened to 52-68? Evolution of filtration standards, Don, Barney and Chuck Rose?
 - e. Research – Mark Renn
 - i. All going well

- ii. There is one issue in a co sponsored project with TC 9.3. This may get pushed back 1 year. Big dollar project. There may be a teleconference to review the bid.
- iii. We need new ideas in Research and volunteers for RTAR creation.
- iv. Can we get a mentor program to help new people?
- f. Standards – Bruce McDonald
 - i. Chairing another meeting
- g. Website - Al Veeck
 - i. Linking to ppt or documents is a issue, but minutes are not an issue.
 - ii. Add and ISO link to Doug Tucker, US TAG Chair and current Status
- h. Planning – Jim Hanley
 - i. 1st meeting
- 4. TC 2.4 Plan Forward – What do we need to strive for and how do we coordinate the activities of the various subcommittees to achieve it?
 - a. See research and Program items above
 - b. Generic Program for ASHRAE Local Chapters on what is TC 2.4 and Why is it Important
 - i. If we can get Professional Development Hours (PDH), we will get lots of participation.
 - c. Lack of Program items is causing us to lose visibility.
- 5. Objectives (a work in progress; keep it useful; a snapshot)

	Objectives; list main objective(s) when applicable for next 12-24 months
Handbook	Complete revisions to Chapter 28 within deadline
Membership	Maintain balance and an active membership
Program	
Publications/Education	Develop chapter presentations for TC 2.4
Research	Successful conduct of ongoing research project(s). One or more new research efforts within 2 years.
Standards	Foster information exchange on US and world-wide standards
Website	Keep website relevant; post DRAFT TC minutes (reviewed by Chair) within ___ month of meeting; post final when approved.
Main TC	See above.

- 6. New Business
 - a. None
- 7. Any agenda changes for next planning meeting? Was this useful? What would make it better? Duration of next meeting (1 hr or 2 hr)?
 - a. Did we miss the target? This was good and needed at 2 hrs.
- 8. Adjourn

ATTACHMENTS

TC 2.4 Membership Report

2011 ASHRAE Winter Meeting Montreal

- The current roster has 18 voting members including one international member.
- Rolling off after the current meeting here in Montreal will be the following; Phil Winters, Marilyn Listvan, Gemma Kerr, Dave Matier, Paolo Tronville. Charlie Seyffer,
- Coming on as voting members after the Montreal meeting are Mike Corbat, Zied Driss, Christine Sun, Al Veeck, Nate Barjesteh. Jeff Sigel comes on as a non-quorum member.
- The new Executive Committee will be as follows;

Chair	Jim Hanley
Vice Chair	Don Thornburg (cm)
Secretary	Tom Justice (cm)
Programs	Steve Nicholas
Research	Mark Renn
Standards	Bruce McDonald
Handbook	Eric Brodsky
Membership	Tom Justice
Publications	Marilyn Listvan (cm)
ALI Coordinator	Barney Burroughs
Webmaster	Al Veeck

- With the ever increasing details surrounding TC 2.4 it has become increasing difficult for visitors and new members to get involved in sub-committee activity therefore we are seeking volunteers to serve as mentors to assist in guiding 2.4 interested parties through the ASRAE maize. Volunteers were Phil Winters, Bob Burkhead, Don Thornburg, Jim Hanley, Tom Kuehn,
- Tom Justice will be sending out a very focused schedule of activities just for new members of the committee to facilitate this same effort.

ATTACHMENTS

ASHRAE RESEARCH SUBCOMMITTEE

Montreal

TC2.4 – Particulate Air Contaminants/Removal Equipment

Sunday, June 26, 2011, 3:00 – 5:00 PM, Hilton Bonaventure – Westmount Room

All interested parties are encouraged to attend the following Project Monitoring Subcommittees (PMS) meeting.

1360-RP How do filters change through their life: pressures drop, efficiency, weight gain and dust composition. **Sunday 11:00 AM – Noon, Fairmont Queen Elizabeth, Jolliet room**

1. Call to Order **Meeting called to order at 3:10 PM**
2. Introductions **Attendance was 30 persons.**
3. Review of Agenda
4. Chair's comments **Acknowledged Jeff Siegel's co-authorship on a paper that received an ASHRAE award. Paper titled "The Influence of HVAC Systems on Indoor Secondary Organic Aerosol Formation". Jeff acknowledged the hard work that the other author, Michael Waring, contributed.**
5. Current Projects
 - a. 1360-RP How do filters change through their life: pressures drop, efficiency, weight gain and dust composition.
Principal Investigator, Kathleen Owen
PMS Chair, KJ Choi
PMS was attended by approximately 16 persons. Ms. Owen finally found a 4th city and that location will be receiving filters this week. Project is currently on schedule to meet the revised TC approved completion date of Sept. 2012.
6. Current Tentative Research Projects (TRP)
 - a. TRP-1603 Role of HVAC Systems in the Transmission of Agents in Buildings and Intermodal Transportation (TC2.4 co-sponsor with TC9.6 and EHC. TC 9.3 main committee)
Paolo Tronville, Christine Sun and Bob Baker are on the PMS and each has received bidder's proposals. No meeting was planned for Montreal. The first PES meeting will be by teleconference next month.
7. Current RTARs and proposals
 - a. 1626-RTAR Energy Implications of Air Filtration in Commercial Buildings
Phil Winters has agreed to take over as champion of this RTAR and address the comments from RAC so it can be resubmitted. Several subcommittee members agreed to assist Phil. If possible, target is to have the comments resubmitted, RL

review and TC vote before The August 15th deadline. If not, then next due date is Dec. 15.

- b. Impact of higher efficiency filtration on IAQ in Residential Environments with Central HVAC - RTAR to be voted on by RAC in Montreal
Will know the official outcome early next month, but according to Iain Walker, RTAR is expected to be approved with minor comments to address.
- c. Proposed RTAR – Energy Implications of Filters – Monroe Britt/Tom Justice
Tom Justice presented an idea for another RTAR. Committee consensus was to wait until results of RTAR 1626 before proceeding.
- d. Others.
Four new Research topics were discussed. “Benefits/Problems of using MERV 13 filters in LEED” was suggested and championed by Jeff Siegel. Assisting Jeff on this is Don Thornburg, Paolo Tronville and Brian Burgess. Others needing a champion are “Survey of Existing commercial HVAC systems and potential Energy Savings Technologies” and “Modeling of Energy Implications of particle removal using various techniques – Residential and Commercial”. Psychometric effects on MERV was tabled until the Chicago meeting.

8. Research Topics (break out in groups to advance the cause) **Did not get to this due to time constraints.**

9. Other Business **Had a request from David Witham of TC 2.9 regarding possible co-sponsoring of research proposal that would in part be involved the effect on filtration on biofilm growth on cooling coils. Several subcommittee members agreed to contact Mr. Witham to see if the project involves interest to warrant TC 2.4 co-sponsorship.**

10. Liaison Report (whenever Iain Walker arrives) **Iain reported that after July 1, he will no longer be our Research Liaison. New RL to be William McCoy. Only outstanding issue is with the disposition of research form not being filed with Mike Vaughn (MORTS) for 1466-RP. Chair will check with Jim Kubokawa (PMS Chair) to see if document has been filed and if not request that he do so.**

11. Adjournment **Adjourned at 5:00 PM**

ATTACHMENTS

TC 2.4 Standards Subcommittee

Introductions

Chairs comments, “Official liaisons”

- There is an opportunity to have a formal Liaison to an SPC/SSPC. The individual needs to apply as a Liaison.
- Barney suggested that we not bother with it, since the logistics are difficult.
- Jim Hanley summarized the discussions in the Planning meeting, which laid out a path forward for putting these in place.
- **Action Item – Zied Driss will apply for official Liaison status on SSPC 170**
- **Action Item – Al Veeck will talk with the Chair and Vice-Chair of SSPC 170 to explain what we are doing. Also, he will try to educate them somewhat on air filtration.**

1) Update on standards within scope of TC 2.4:

a) **SSPC 52.2 M.o.T. Air Cleaners for Particle Size Efficiency – Jim Hanley**

- i) Met Saturday morning (32 people)
 - (1) Don will be rolling off as Chair. Bob Burkhead is the new SSPC Chair.
 - (2) Approved adjusting the MERV table to get rid of jump from MERV 8 to 11 & jump from 11 to 14. Next step is a public review.
 - (3) Discussed revisions to spec for particle counters. Jim to draft revisions.
 - (4) Discussed effect of RH on filter performance/testing. Motion to change the RH range for the Standard (20-65% going to 40-60%), but this was tabled for Chicago to allow additional information to be obtained. There was some additional discussion about drying the aerosol. Two to three labs will be performing this testing.
 - (5) Discussion about use of IPA vapor for discharge. Monroe and Kathleen presented data.
 - (6) A definition of MERV was discussed. Jim has resurrected the earlier definition:

MERV (Minimum Efficiency Reporting Value): a classification of particulate filter efficiency based upon the final Composite Efficiency Curve of ASHRAE Standard 52.2 to reflect the minimum efficiency at each of 12 size fractions over an entire dust loading cycle of the test method. The designation is determined by averaging the minimum efficiency values during the test within each of three efficiency threshold brackets to represent efficiency against fine (E1), medium (E2), and larger particles (E3). The E1, E2 and E3 values are then compared to the thresholds shown in table 12-1 of the standard to determine the final MERV value.
 - (7) Discussion about the repeatability and reproducibility of test data.
 - (8) Discussed the dual path associated with ISO work and SSPC 52.2.

ii) **Corporations ignoring MERV – Bob Burkhead**

- (1) This seems to have been hung up at ASHRAE.
- (2) **Action Item – Phil to follow up with ASHRAE Staff about this letter before the TC 2.4 main meeting.**

2) ASHRAE Liaisons:

a) **TC 2.3 – Gaseous Filtration – Kathleen Owen**

- i) They have a Work Statement that was approved and voted on tomorrow, at the main TC meeting
- ii) SPC 145 has applied to become an SSPC.
- iii) The galley proofs for 145.2 are approved and should be out for printing soon.

- b) **TC 2.9 – UV Air & Surface Treatment – Matt Middlebrooks**
 - i) 185.1 (UVGI in air) is going out for public review
 - ii) 185.2 (UV irradiation on surfaces) is a little farther behind, but may pass public review quicker. Finished final edits today.
 - iii) There is also some work going on for degradation of HVAC materials exposed to UV light.
- c) **TC 5.4 – Industrial Air Cleaning – Bruce McDonald**
 - i) Working on SPC 199 (see below)
 - ii) Looking for Members
- d) **TC 9.6 – Health Care Facilities – Zied Driss**
 - i) Chair is changing. They didn't have a quorum for their meeting.
 - ii) SPC 170 – Addendum L & M are out for review. No relation to filters.
 - iii) Addendum J does affect filters. There was a letter ballot, but we don't know the status.
 - iv) SPC 100 – Energy Efficiency for Existing Buildings (Rick Herman is Chair)
 - v) Healthcare Facilities OEM Guideline is being revised (Carl Larson is Chair)
 - vi) There is some research that they are working on that focuses on larger particles (5 microns +) in Operating Rooms.
- e) **SSPC 62.1 – Commercial Ventilation – Charlie Seyffer**
 - i) No report
- f) **SSPC 62.2 – Residential Ventilation – Tom Justice**
 - i) Tom to send a copy of information about “minimum filter efficiency” in this Standard. This is not coming up for review any time soon. Just FYI.
 - ii) There may be room for people to become Voting Members.
- g) **SSPC 90.1 Energy Eff. Design of New Bldg – Christine Sun**
 - i) No Report
- h) **SSPC 90.2 Energy Eff. Design of New Low Rise Res. Bldg – ?**
 - i) No report.
- i) **SPC 145P Test Methods for Assessing Performance of Gas Phase Air Clean. Equip –**
 - i) See above (TC 2.3).
- j) **SSPC 161 – Air Quality in Commercial Aircraft –**
 - i) No report.
- k) **SPC 170 – Ventilation of Healthcare Facilities – Zied Driss**
 - i) See above (TC 9.6)
- l) **SSPC 180 – Inspection & Maintenance of HVAC Systems – Charlie Seyffer**
 - i) No report.
See also: New Business.
- m) **SPC 185.1P Elimination of Microbial Contaminants in Air – Matt Middlebrooks**
 - i) See above (TC 2.9)
- n) **SPC 189.1 ASHRAE/USGBC/IESNA Standard for the Design of High-Performance Green Buildings except Low-Rise Residential Buildings (?inclusion of IAQ) – David Matier**
 - i) No report
- o) **SPC 189.2 Design, Construction and Operation of High-Performance Green Healthcare Facilities (?inclusion of IAQ) – Barney Burroughs**
 - i) The Air Quality Subcommittee is willing to listen more to the IAQP method
- p) **SPC 199 – MOT for Rating the Performance of Industrial Pulse Cleaned Dust Collectors – Bruce McDonald**
 - i) Some progress (5 or 6 sections) has been made. A major effort is scheduled for Chicago.
- q) **GPC-10P Achieving Acceptable Indoor Environment – Barney Burroughs**
 - i) The Guideline is published and available in the bookstore.
 - ii) Per Barney, it is “an enlightening read”.
 - iii) The GPC is now a standing committee.
- r) **GPC 33P Guideline for Documenting Indoor Airflow and Contaminant Transport –**
 - i) No report

s) **ISO TC142 US TAG – Mark Renn**

- i) TAG voted to approve the following documents:
 - a. ISO/NP 15957 Challenge contaminants for testing air cleaning equipment – WG3
 - b. ISO/NP 12249 Sustainability of particulate air filters for general ventilation – Part 1: Method of life cycle cost calculation. – WG3
 - c. ISO/NP 14086-1 Flat sheet filter media – Part 1: Fractional eff. test for general ventilation applications – WG6
 - d. ISO/DIS 10121-2 Test methods for accessing the performance of gas-phase air cleaning media and devices for general ventilation – Part 2: gas phase air cleaning devices – WG8
 - ii) Upcoming votes:
 - a. ISO/CD 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 – WG8 AP –July 12
 - b. ISO/FDIS 29463 Parts 1 thru 5 High eff. filters and filter media for removing particles in air – WG4 AP - TBD
 - iii) We (the US) may be able to place a new Convener for WG 2 (UVC). TC 2.9 is working on this.
 - iv) Trying to find a way to put HEGA into the ISO documents
- t) **Indoor Air Quality Design Guide. – Barney Burroughs**

3) **Old Business**a) **Progress on TPS for:**

- i) **Interpretative Guideline for People to use the Data from a ASHRAE 52.2-2007(b) test – Peter Shipp - Remove from this list.**
- ii) **Calculation of the Life Cycle Cost and the Energy Rating for Air Filters – now at ISO TC 142 but with work continuing at ASHRAE – Christine Sun – Remove from this list and place MTG-EEC in the above list.**

b) **Progress on committee formation for:**

- i) **MoT for Filtration Efficiency on particles below 300nm – Kathleen Owen**
 - (1) Still interested in getting this done, but this is on hold. Interested in getting it going again.
 - (2) Preliminary focus is 30 to 300 nm.
- ii) **Activity at ISO TC 142/WG 4 regarding nano particle testing – Vijay**
 - (1) CEN TC 195 may be taking the lead on something similar to this, but focused on 1-100 nm.

c) **Environmental Health Committee asked for TC 2.4 input on TPS for 2 initiatives:**

- i) **Developing a position document regarding “Environmental Health in Green Building Programs”**
 - (1) We have provided input. Nothing seems to have come of it yet.
- ii) **Developing a position document regarding “Air Filtration and Cleaning”**
 - (1) We have provided input. Nothing seems to have come of it yet.

4) **New Business**a) **UL Canada proposal to revise S111 (to match changes in UL 900 in US) – Phil Winters**

- i) UL Canada have agreed to consider this change, but they won't meet until after the change in the US will be fully in place.

b) **45-Day Public Review of Standard 180-2008, "Standard Practice for Inspection & Maintenance of Commercial Buildings HVAC Systems": changes to maintenance schedule for filters**

- i) Table 5-2 changes the frequency of inspection for air filters from monthly to quarterly. Also changes housing integrity from monthly to annually.
- ii) Comments due August 1st. Process is online and pretty easy, once you create an account.

5) Information Exchange:**a) AFS – KJ Choi**

- i) Fall Topical Conference: “New Energy Era”, October 17-20, 2011. Hilton Westchase, Houston
- ii) Annual Conference: “Sunshine Environment”, June 4-7, 2012, Embassy Suites, Boca Raton, FL

b) AHRI – Eric Chen No report**c) CEN/TC 195 – Air Filters for General Air Cleaning – Paolo Tronville**

- i) Most of the ISO/TC142 work is getting parallel vote in CEN TC 195. The only problem so far has been the Life Cycle Cost
- ii) The most recent version of TN 779 is held up by an appeal of the vote by Italy. They would like to see changes to the efficiency table (removing average efficiencies for those filter classifications that now use minimum efficiency). There will be a vote in October to resolve the problem.

d) Eurovent – Paolo Tronville

- i) They have begun to meet more regularly.
- ii) They have recently released an energy rating system (available for free on the Eurovent web site)
- iii) There was an attempt to establish a PM-based classification system, but it was dropped.

e) IESO (IAQA is parent org.) – Phil Winters No report due to time constraints**f) IEST – Institute of Environmental Sciences and Technology – Phil Winters** No report due to time constraints**g) INDA – International Nonwovens Development Association – Emily Moore**

- i) November 14th through 17th, in Chicago.

h) ISO TC 142 – Cleaning Equipment for Air and Other Gases – Paolo Tronville No report due to time constraints**i) CEN TC 144 – Environmental Air quality for Agricultural Cabs – Paolo Tronville** No report due to time constraints**j) NAFA – Al Veeck**

- i) Recently returned from successful conference in Mexico

k) SAE Air Cleaner Test Code Standards Comm. – Bruce McDonald No report due to time constraints**l) ISO TC 22/SC 7/WG 3 & WG 11 – Paolo Tronville or Bruce McDonald** No report due to time constraints**m) UL 900 – Phil Winters** See UL in new business.**n) REHVA HVAC air filtration guidebook** – No report due to time constraints**o) National Science Foundation – Tom Justice**

- i) New item added to this list.
- ii) Grant was awarded to NC State, University of Akron and University of Minnesota. Congress has not yet funded it, however.

p) Association of Facilities Engineers – Stephen Nicolas

- i) New item added to this list.
- ii) AFE is in negotiation with ASHRAE regarding a Memorandum of Understanding. More details to follow at Chicago.

6) Adjourn – 5:58 pm

ATTACHMENTS

TC 2.4 Programs Meeting – Ideas for Chicago and Beyond

Chicago's Theme – "The Impact of HVAC&R on our Daily Lives"

Tracks:

Energy Efficiency – New Technologies and Applications
Integrated Design
Specialized Applications – Healthcare, Laboratories and Data Centers
Energy Modeling Applications
Installation, Operation and Maintenance of HVAC Systems
High Performance Buildings
HVAC&R Systems and Equipment
Professional Skills
HVAC&R Fundamentals and Applications
Refrigeration

Votes	Title	Format	Champion
7	YEA for Filters!	Seminar	Al Veeck
6	Is Filter Performance Related to Your Life?	Seminar	KJ Choi
3	Why Does the Weather Channel Care About Particles/Ozone? (Co-Sponsor with 2.3)	Forum	Marilyn Listvan
3	Stop Wasting Money - Energy Optimization for Filters	Forum	Monroe Britt & Tom Justice
1	Stop Breathing Dirty Air – Engineer it Out of Your Building	Seminar	Al Veeck
5	Clearing the Air on Filtration (Mythbusters)	Seminar	Emily Moore
5	Filtration for LEED Points	Seminar	Don Thornburg
1	Sustainable IPAD (Integrated Particulate Air-Cleaning Devices) for Healthcare Buildings	Seminar	Zied Driss
XXX	Do We Need A Residential Filter Testing Standard and Rating System?	Conference Papers	Tom Justice

Deadlines (Note – Does the full TC need to vote on these before they are submitted?):

- August 12th – Chicago Seminar and Forum Session Proposals are due to CEC (online submission)
- September 26th – San Antonio Conference Paper Abstracts / Full Technical Papers are due to CEC
- February 13th, 2012 – San Antonio Seminar and Forum Proposals are due to CEC

ATTACHMENTS

Handbook Subcommittee

TC 2.4 - Particulate Contaminants/Removal Equipment

Sat. June 25, 2011 1:00 – 2:30

1. 1. Call to order 1:10 pm Eric Brodsky, Chair
2. Introductions /Attendees: Mick Flom, Paolo Tronville, Zied Driss, Bruce McDonald, Phil Maybee, Gemma Kern , Jim Hanley, Kathleen Owen, Don Thornburg, Phil Winters, Bob Burkhead , Eric Brodsky
3. Reviewed timeline for Chapter 28, Air Cleaners for Particulate Contaminants of the HVAC Systems and Equipment, was submitted in April 2011. Chapter proofs will be available for review in the fall. Any changes made after April 2011 will be updated in future versions.
4. Reviewed Chapter 28 and agreed to work on updates to the following sections
 - Aerosol Characteristics - Zied will rewrite - Bioaerosols
 - Air-Cleaning Applications - Need to define smaller particles, Zied will define in Section on aerosol characteristics, Gemma will add definition into Chapter 11
 - Particle Size Removal Efficiency Test - Eric Brodsky, update for metric , Add Appendix J research study, Zied & Phil Maybee
 - Other Performance Tests - Paolo, will rewrite, ELB will restructure section for General ventilation & HEPA,ULPA, in 2 discrete sections
 - Guideline 26-2008 - Eric Brodsky correct spelling, and wording
 - Selection and Maintenance - Phil Maybee will update with note about spacing of filter downstream of wet systems
5. Discussed Chapter 11 Air Contaminants and agreed to send draft to Handbook committee for review, with comments back by September 15.
6. Specifically the following sections

<i>PARTICULATE CONTAMINANTS</i>	11.2
<i>Particulate Matter</i>	11.2
<i>Outdoor Air Contaminants</i>	11.15
<i>Industrial Air Contaminants</i>	11.16
<i>Nonindustrial Indoor Air Contaminants</i>	11.16
<i>Combustible Dusts</i>	11.18

(Phil Maybee, & Zied will update Sizes of Airborne Particles and include a section on definition of nanoparticle 6-25-2011

7. Actions: None taken
8. Adjournment at 2:30 pm

Prepared by Eric Brodsky,
Draft Minutes submitted: 6/28/2011

ATTACHMENTS

Publications Subcommittee

Publications Minutes of 6/27/11 (Montreal), submitted by Marilyn Listvan, Chair

The joint TC 2.03 and 2.04 Publications Subcommittee Meeting was held on June 27, 2011 in Montreal, Canada and had 18 members present. (emails at the end).

A. Information Sharing:

“**Who is MERV?**” by Al Veeck, got published by ASHRAE!

1. A List of ASHRAE publications produced in last 6 months was handed out; noted that included CD proceedings of IAQ 2010.
2. ASHRAE Wiki – a wiki has been created of ASHRAE terms & terminology. We are supposed to check for accuracy. Wiki.ashrae.org. Will replace the TC1.6 Terminology book that ASHRAE publishes.
3. Publications review summary (table on same handout). We (2.3 & 2.4) have no review requirements.
4. Marilyn owes scanning fixes and “front material” for “archive IAQ CD”. She & Charlie Seyffer are trying to wrap this up and find a scanner to complete this.
5. Brad asked to have all of the handouts that she handed out today electronically.

B. Unsolicited book proposal. One book proposal is said to be applicable to us, *Odor Control HVAC Systems for Waste Water Treatment Plants*.

Motion made to recommend ASHRAE **not** support this.

Discussion: Inappropriate for 2.3 and 2.4 because it concerns biofilters, committee on odors. Also a concern that it was not conceived to be appropriate input for handbook chapters. A comment was also made that HVAC in wastewater plants is not part of odor control system but part of exhaust. Should go to the Waste Water Association instead of ASHRAE. Also noted that EPA already has a book like this.

Motion carries to recommend to not support this proposal.

C. List of projects that people are writing or think should be written:

Note: ASHRAE Conference papers are a “shoo-in” for getting into the program—
so WRITE!

**(note: approx. 2500 words for an ASHRAE Journal article, plus figures)
approx 250 - 600 words for a Short topics (quick lessons learned, etc.) article in the Journal;
feature per Fred Turner)
aprox 200-300? words for Insights**

CHAMPION(s): Topic

- a. Gemma Kerr: papers out of her research project (RP-961) – Gemma said one, maybe two papers still possible, but cannot give titles at moment “Real-world results of construction effects on IAQ”.
- b. Charlene Bayer & Barney Burroughs: “IAQP Research-Real Buildings-Case Studies” – noted: ideally want metrics and data to be able to compare papers.
- c. Zied Driss & Steve Nicholas: Filters for LEED points
- d. Tom Justice (& Nate Barjesteh & Tad Detat(?)): Do we need a Residential Filter Standard/ Rating System?

- e. Marilyn L. & Ashish Mathur(?) “SOTA Gas Sensing Review paper” – especially ozone & formaldehyde
- f. Charlene B.: Emerging Issues –Contaminants of Concern (CoCs) e.g. also maybe forum topic discussed in EHC (ozone, formaldehyde, EU lists of CoCs)
- g. Charlene: (has a book chapter in final edit) “Evidence-Based Design” from Encyclopedia of Sustainability Science & Technology; Springer, publisher.
- h. Jeff Roseberry: has a paper coming out; “Advanced Air Purification System Eliminates Contaminants and Reduces Energy Use” (July/Sept issue of ISHRAE, accepted for publication)
- i. Kathleen Owen: Ultrafine particles filtration (note Charlene recently saw a relevant health article on Ultrafine issues)
- j. Volker Haendler: Filtration in the food industry – food processing safety versus indoor air quality – Europe’s E. Coli outbreak, etc. – like hospital guidelines on filtration – but for food processing
- k. Mark Stutman, Charlie Seyffer, Nick Agopian: Articles related to the IAQP – Stuff discussed in TRG4IAQP – more than anecdotal – justify what was done
- l. _____: Pre- & post-testing protocols & results.
- m. Charlene: Outdoor Air vs. Indoor Air (Dennis Stanke’s question rebuttal)
- n. Al Veeck, Chuck Rose, Barney Burroughs, Don Thornburg: Evolution of air filtration standards (why have we gotten to where we are today)
- o. Zied Driss, Chuck Rose & ___?__: Attempts of filtration that did not work in the past (Horror stories of filtration); perhaps a forum topic, too?

Send citations (title, where, when , etc.) of what you have written (or know about) to Marilyn for a website IAQ bibliography

1. Indoor Air Proceedings listing
2. IAQ CD 2010
3. Jeff Siegel’s papers
4. Barney Burroughs’s papers
5. . . .send yours in to me at mlistvan@yahoo.com!!

Attendees of 06/27/11 meeting (the contact info will not be included in TC minutes or posted on the website):

Name

Marilyn Listvan
 Gemma Kerr
 Kathleen Owen
 Nate Barjesteh
 Mick Flom
 Zied Driss
 Christopher Campion
 Jeff Roseberry
 Ashish Mathur
 Brian Burgess
 Emily Moore
 Volker Haendler
 Dave Schaaf
 Paula Levasseur
 Tim Ahn
 Stephen Nicholas
 Nick Agopian