

ASHRAE MEETING MINUTES – New York, NY

TC 2.3 - Gaseous Air Contaminants/Removal Equipment TC Meeting

Tuesday, January 22, 2008
13:00 - 15:30
Sheraton Hotel – Room L (Lower Level)

NOTICE:

These minutes has been approved and are official.

- The meeting was called to order at 1:10 pm by Chairman Dean Tompkins. The meeting attendee list is as follows:

Name	Email address
(Member – 9)	
Mark Stutman	stutmanm@camfilfarr.com
Gemma Kerr	gemma.kerr@inairenvironmental.ca
Karin Foarde	kkf@rti.org
Paolo Tronville (International Member)	paolo.tronville@polito.it
Dean Tompkins	dtompki@wisc.edu
Kyung-Ju Choi	kchoi@aafintl.com
William Lull	ashrae@garrisonlull.com
Nick Agopian	nagopian@dectron.com
Chris Muller	chris_muller@purafil.com
(Corresponding Members & Visitors)	
Eric Kuiper (International Member)	erik@mail.ashrae.org
Matt Middlebrooks	mmiddlebrooks@filtrationgroup.com
Kathleen Owen	mko@rti.org
Chang-Seo Lee	cslee@dectron.com
Marilyn Listvan	mlistvan@yahoo.com
Jeff Roseberry	Jeffr@promarkassociates.com
Doug VanOsdell	dvw@rti.org
Derald Welles	dwelles@netcom.com
Jennifer Kaminski	jkaminsk@kcc.com
Dave Chojnowski	davidc@uic.edu
Paul Nigro	pnigro1@uic.edu

Catherine Jacquioid	cotherine.jacquioid@saint-gobain.com
Mick Flom	mflom@lmstechnology.com
Shane Tincher	stincher@clair.com
Bob Burkhead	bob@blueheaventech.com
Scott Walker	swalker@sparkstech.com
Gary Luepke	gluepke@trane.com
Tom Kelly	Thomas.j.kelly@carrier.utc.com

- Attendee self-introductions were made.
- Voting membership was identified.
- Liaisons were given the opportunity to give their report(s). See below for written text on the individual reports.
 - New liaison-Chuck Wilkin – Section 2 Head
- Roster check was made. TC 2.3 has 10 voting members. Voting members present at the TC meeting include:

	<u>Present</u>	<u>Absent</u>
1) Paolo Tronville (International Member)	X	
2) Karin Foarde	X	
3) Nick Agopian (Vice Chair)	X	
4) Ez Khalifa	X	
5) Dean Tompkins (Chair)	X	
6) KJ Choi	X	
7) William Lull	X	
8) Gemma Kerr	X	
9) Bob Hendry		X
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	Totals: 9	1

Bob Hendry, who has limited travel funds, will be rolled off.

A quorum was achieved with 9 voting members present. (Needed for quorum: 50% + 1 of voting members.)

Comments

None

- **Motion :Approve Long Beach meeting minutes**
By: Karin Foarde
Seconded: Nick Agopian
Results: For-8 / Against- 0 / Abstain-0 / CNV
Background/Discussion: Symposium session name to transaction

MOTION APPROVED to accept the Meeting Minutes from Long Beach with the knowledge that the requested changes discussed will be made:

Number of voting members from 11 to 8

- Minutes to be published within 60 days following the minutes.

Comments: Minutes will be sent to Erik so he can remove email addresses

Subcommittee Reports Made:

Membership (Nick Agopian, Chair, reporting)

The current TC 2.3 leadership team is:

- Chair – Dean Tompkins
- Vice Chair – Nick Agopian
- Secretary – Shannon Schoppman
- Research – Karin Foarde
- Planning – Nick Agopian
- Membership – Nick Agopian
- Standards – Paolo Tronville
- Program – Dean Tompkins
- ALI Coordinator (ASHRAE Learning Institute) – Doug VanOsdell
- Handbook – Gemma Kerr
- International – Paulo Tronville, Erik Kuiper
- Webmaster – Erik Kuiper
- Publications – Marilyn Listvan

Other: Room Count

Corresponding Member Count: 9

Visitors/Guests: 5

Voting Members: 11 (want to increase by 4)

Roster Change-Bob Henry rolling off

Matt Middlebrooks replacing Phil Winters

Research (Karin Foarde, Chair)

1. The minutes from Long Beach, summer 2007, were reviewed and changes submitted.
2. RAC Liaison Ian Walker was not present. No pending issues but will confirm at the research chairs meeting. Will be getting a new liaison after this meeting.

3. Presentations/Up-Dates on Current Research Project

a. 1302-RP “Comparison of Gas Phase Air Filtration Equipment (GPAFE) Lab Tests to Field Experience. Principal Investigator – Donald H. Stedman, University of Denver [PMC-Gemma Kerr (Chair), Bill Lull, Matt Middlebrooks, Paolo Tronville, and Nick Agopian]

The objective of this project is to provide directly comparable performance data and or methods (i.e., correlate approaches) to make comparisons for various media used in GPAFE designs at both accelerated (high challenge concentration) and application (very low challenge concentration) conditions within a lab setting.

Final report was received in October. The PMC plans to request editorial revisions to incorporate and summarize more thoroughly the findings. The data was in the appendix but lacking in the body of the report. PMC will rename the project title.

b. 1457-TRP “By-product Production from Photocatalytic Oxidation Associated with Indoor Air cleaning Devices” has been awarded to Dean Tompkins University of Wisconsin. [PMC-Eric Kuiper (Chair), Gemma Kerr, Doug VanOsdell, Marilyn Listvan

The objective of this project is to investigate products released during photocatalytic oxidation of selected indoor air contaminants to obtain data and improve and make safer air cleaners that use this technology.

A presentation was made by Ramsey Kropp, Dean Tompkins’ student. A significant effort has already been made. The PMC reported being pleased with the progress.

5. Work statements & RTARs

A draft RTAR “Real lab environment comparison tests of PCO vs. carbon filter (flow, pressure drop, RH, temp, multiple VOCs, etc)” was prepared by Dean Tompkins. Reviewers were requested. Jensen Zhang, Nick Agopian, Erik Kuiper, and Brad Stanley agreed to assist.

Paolo Tronville further investigated the need for the research on the combined particulate/gas phase filters. He has determined that the topic should be dropped.

Jensen Zhang suggested that the formaldehyde RTAR idea be combined with the draft RTAR prepared by Dean Tompkins.

A new RTAR entitled, “Lab Comparison of testing challenge concentration (high) to application challenge concentrations (low) for GPAFE” was proposed by Matt Middlebrooks. He will start drafting it. Bill Lull, Paolo Tronville, Mark Stutman, and Nick Agopian will review.

6. Research Plan

TC 2.3 2007-2008 Research Plan

Projects	Person Responsible	Priority
Real lab environment comparison tests of PCO vs. carbon filter (flow, pressure drop, RH, temp, multiple VOCs, etc)	Dean Tompkins	1

Projects	Person Responsible	Priority
Evaluation of combined particulate and gaseous filters (combi-filters): What happens to gas phase contaminant levels with particulate loading?	Paolo Tronville	2
Evaluating formaldehyde cleaning devices	Jensen Zhang	2

7. The research subcommittee adjourned at 6:25.

Comments

- RTAR reviews by Feb 18th and send to Karin Foarde.
- U of Wisconsin Program Presentation

Program (Dean Tompkins, Chair, reporting)

- Program(s) presented in New York, NY January 22, 2008:
 - 17 People in Meeting

Forum 17: Should Air Filtration Standards go Global? –Paulo Tronville

<u>Name</u>	<u>Title</u>	<u>Co-Sponsor</u>	<u>Chair</u>
Forum	Hot Topics 145.2	None	Doug VanOsdell
Forum	Ozone Removal		Matt Middlebrooks
Seminar	Energy Conservation using IAQ Procedure		Chris Muller
SEMINAR	Formaldehyde Cleaning Devices		KJ Choi

Motion: Accept the Program as presented at the meeting and listed above.

Made by: Gemma

Second: Nick

Results: For-8 / Against-0 / Abstain-0 / CNV

Discussion: none

Transactions:

Louisville Papers Due Date September 26th

Handbook (Gemma Kerr, Chair)

Note that TC 2.03 is responsible for Applications Chapter 45 and Fundamentals Chapters 12 and 13. The latter are due for submission to ASHRAE May 24th 2008 and July 14 2008. Since the Applications Handbook is appearing this year, only the Fundamentals chapters were discussed at the meeting.

Regarding Chapter 13, there are no longer people with expertise in this subject who belong to TC 2.3. No one present at the meeting was able to suggest a suitable reviewer for the chapter. Action items are as follows:

- All present at the meeting will review chapter 13 by the end of August and send their comments to Gemma
- Doug will provide Matt with a copy of the Fundamentals Handbook since all of his ASHRAE material is gone
- Everyone will think again about who might be a suitable reviewer and pass on names to Gemma

Regarding Chapter 12, the Dallas Minutes listed eight action items for editing the Chapter, none of which have been acted on yet. Each was further discussed as shown below. Details and people responsible are shown below. Revisions are due end of September.

1. Under definitions, the abbreviations *nm* and *lm* are used without stating what they are abbreviations of, no definitions are given for microscopic and sub-microscopic particle sizes, and ultrafine particle mode is used in Figure 4, but not mentioned earlier where the coarse and fine particle modes are discussed. **Doug VanOsdell** will write up these items.

2. Revision of Table 5 (list of chemicals). It was decided not to combine this table with either Table 6 or Table 13, but to reduce the number of chemicals listed and attempt to make the table more useful by adding information on family properties and harmful characteristics. Table 6 should be retained, but should not include any chemicals which do not appear in Table 5. Also, care should be taken to ensure consistency of naming chemicals and chemical families between text and tables. **Gemma Kerr** will revise Table 5 and change Table 6 as necessary. Nick will send his material on chemicals to Gemma to assist.

As part of this revision, Table 10 should become a table of typical organic air contaminants (not “example sample target list”). All entries in Table 10 should also have appeared in Tables 5 and 6. **Gemma** will take care of this.

3. Text or Table 6 should refer to Fundamentals Chapter 39 which contains similar information to the Table. **Gemma** will take care of this.

4. It was decided that Tables 7 and 8 (measurement methods) should not be combined. **Matt Middlebrooks** will look into revising and updating the info in these tables.

5. Gemma will enlist the help of **Karin Foarde** to improve the microbial contaminants section, including discussion of MVOCs and mycotoxins.

6. **Nick Agopian** will update Table 11 (typical outdoor concentrations for selected contaminants). Particulates (PM₁₀ and PM_{2.5}) should be included, and ranges used rather than single concentrations). Concentration units should be changed to ppm and ppb for gases. This Table also appears in Chapter 45 and should be updated there too.

7. **Gemma** will be responsible for revising Table 13. Typical indoor concentrations should be updated, and source information retained. Locations where contaminants are found might be dropped as superfluous.

8. Regarding adding information on material emissions as part of non-industrial contaminants, Doug pointed out that there is emissions information in Chapter 45 including data tables. He considers this material is useful in Chapter 45 and should stay there, so that it may not be necessary to add to Chapter 12.

Additional action items were identified as follows:

- **Gemma** will get a soft copy of Chapter 12 (Microsoft Word) and distribute it to Doug, Nick, Matt and Karin.
- **Doug** will review material on controlling exposures to VOCs and inorganics and determine whether it should be moved to Chapter 45.
- **Gemma** will merge all the revisions.
- **Everyone** (including Mark and Bill) will review the revised Chapter.

Standards (Paolo Tronville, Chair, reporting.)

1) Reports were presented on standards within scope of ASHRAE TC 2.3 as follows:

- a) GPC 27P “Procedures for measurement of gases in indoor environments” - Bill Lull reported that the outline will be finalized by end March, then will start writing.
- b) SPC 145.1 “Laboratory Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media” – Matt Middlebrooks reported that public review comments have been addressed and 145.1 was voted to go to publication.
- c) SPC 145.2 “Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices” - Matt Middlebrooks reported that a limitation was agreed not to use the standard for wet scrubbers. A revised draft will be sent out from Doug VanOsdell around March 1st 2008.
- d) SPC 145.3 “Field Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Installed Systems” – Matt Middlebrooks reported that work on this standard has not started yet There probably will be no action until 145.2 is finished. Chris Muller will indicate what to do about this part during the next Annual Meeting in Salt Lake City.

2) Reports were presented on standards from other ASHRAE TCs as follows:

- a) TC 2.4 “Particle Filtration” – Gemma Kerr reported that Guideline 26 has been completed and voted to go out for public review. Guideline 17 has been reactivated under Erik Kuiper and will be completed within a year if all proceeds as planned. Standard 52.2 has overcome some of the issues related to the preconditioning step and will put an optional procedure using this in an Appendix.
- b) TC 2.9 “Ultraviolet Air and Surface Treatment” – Matt Middlebrooks reported that SPC 185 is still in the early stages but with an aggressive timetable for completion.

- c) TC 5.4 “Industrial Process Air Cleaning” – Kathleen Owen reported that research is ongoing but the standard will not be written until 2010. They are mainly interested in particles.
- d) TC 9.6 “Health Care Facilities” – There was no report.
- e) TC 9.11 “Clean Spaces” – Matt Middlebrooks reported that there was not much gas phase discussed.
- f) SSPC 62.1 “Ventilation and IAQ High Rise Buildings” – Filtration treatment for removing ozone was confirmed by a vote
- g) SSPC 62.2 “Ventilation and IAQ Low Rise Buildings” – No-one is talking about filters now that Barney Burroughs is no longer a member. A “User’s Guide” about this Standard has been recently published.
- h) SPC 161 “Air Quality Within Commercial Aircraft” – There was no report.
- i) SPC 170 “Ventilation of Healthcare Facilities (?)” – No action this meeting
- j) GPC 28 “Air Quality in Commercial Aircraft” (see SPC 161)

3) Information Exchange

- a) AFS – KJ Choi reported that AFS will hold its annual meeting in Valley Forge PA May 19-22, and that the 10th WFC meeting will take place in Leipzig, Germany April 15-18.
- b) ARI – There was no report.
- c) ASTM D22.05 “Air Quality” /SC “Indoor Air” – There was no report.
- d) ASTM D28.04 - “Activated carbon” /SC “Gas Phase Evaluation Tests” – There was no report.
- e) CEN/TC 79 “Respiratory protective devices”
 - i) EN 12941:1998 “Respiratory protective devices. Powered filtering devices incorporating a helmet or a hood. Requirements, testing, marking ” - Matt Middlebrooks reported that tests are done at high concentration and may not be very relevant
 - ii) EN 14387:2004 “Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking”
- f) CEN/TC144 “Tractors and machinery for agriculture and forestry” – Paolo Tronville
 - i) prEN 15695-2 “Agricultural tractors and self-propelled machinery - Protection against hazardous substances - Part 2: Air purifying devices” – Paolo Tronville reported that high concentration testing with uncommon VOC is done
- g) CEN/TC 195 “Air filters for general air cleaning” – Paolo Tronville
 - i) WG 5 “Sorptions filters” – Paolo Tronville reported that this will run parallel to ISO 142
- h) CEN/TC 346 “Conservation of cultural property” – Chris Muller
 - i) WG 4 “Environment” – There was no report.

- i) IEST WG–CC035 “Design Considerations for Airborne Molecular Contamination Filtration Systems in Cleanrooms” - Mark Stutman reported that documents will be combined to provide a low level procedure. There is not enough interest to do more
- j) ITRI (Taiwan) – Nick Agopian reported that their procedure has not changed since Long Beach, and is applied only in Taiwan.
- k) ISO/TC 142 “Cleaning Equipment for Air and Other Gases” – Paolo Tronville
 - i) US Technical Advisory Group (TAG) – Phil Winters
 - ii) WG8 “Gas-phase cleaning” – Matt Middlebrooks said it is using the same format as 145, starting with media test.
- l) ISO/TC 22/SC7/WG3 “Air and oil filters”
 - i) ISO/DIS 11155-2: 2007 “Road vehicles - Air filters for passenger compartments - Part 2: Test for gaseous filtration” – Paolo Tronville said this was approved as draft international standard. Matt Middlebrooks said it was an interesting procedure.
- m) ISO/TC 118 “Compressors and pneumatic tools, machines and equipment” /SC4 “Quality of compressed air”
 - i) ISO 12500:2007 “Filters for compressed air - Test methods - Part 2: Oil vapors” – Paolo Tronville said this standard really belongs in ISO/TC 142. It deals with exhaust gases.
- n) ISO/TC 205 “Building environment design”
 - i) ISO 16814 “Building environment design - Indoor air quality - Methods of expressing the quality of indoor air for human occupancy” Paolo Tronville reported that ASHRAE is the lead agency. Gas phase is mentioned but there is no test method.
- o) ISO/TC209 “Cleanrooms and associated controlled environments”
 - i) ISO 14644-8 “Classification of airborne molecular contamination” – Matt Middlebrooks reported that the classification for gases based on ppt concentration and includes measurement methods.

Planning (Nick Agopian, Chair, reporting)

The Denver 2005 Minutes, which were the most recent Planning Minutes available, were used to set the Agenda.

One of the key goals of the committee is to make grassroots ASHRAE members (mostly Chapter members who do not attend winter and summer meetings) aware of gas phase filtration and how and when to use it. Two presentations that could be used by TC 2.3 members were planned: a 15-minute summary talk to raise awareness of the TC and what it does; and a half-hour tutorial on gaseous contaminant control. Doug VanOsdell prepared a draft tutorial two years ago which could form the basis for both presentations. Marilyn agreed to contact Doug and get the presentation redistributed to committee members for review by the end of August. Comments should be sent to everyone, and it would also be good to get Chris Muller involved in the review process. He is currently an ASHRAE Distinguished Lecturer and has a talk that may overlap the

half-hour tutorial..

Standard 62.1's IAQ procedure is currently receiving attention. Part of the TC's Roadmap might include preparation (in conjunction with TC 2.4) of a comprehensive filtration selection procedure that would meet the needs of engineers using the IAQ method. To make a start on this, we should propose a program for the New York meeting on IAQ procedure case studies (*this was done, and Nick Agopian is the Seminar Chair*).

There was discussion on use of the website as a communications tool to reach ASHRAE members and non-members. Nick is passing on the webmaster job to Erik Kuiper. The site is hosted by NAFA and its address is www.nafahq.org/ashrae/tc23. However, it is not yet linked to ASHRAE's TC website area, which is a must for reaching anyone outside of the TC. Marilyn agreed to bring this matter up with the Electronic Communications Committee to get it linked quickly (*Note that the TC 2.3 website is now accessible from ASHRAE's website*).

The possibility of posting on the website a presentation from one of TC 2.3's back-to-basics seminars was discussed and should be pursued.

Gemma agreed to write an abstract of Fundamentals Handbook Chapter 12 (Air Contaminants) for posting on TC 2.3's website. Material on the TC's other chapters should also be posted (Fundamentals chapter 13 - Odors, and Applications chapter 45 - Control of gaseous contaminants).

TC 2.3 should have a mission statement to post on its website. This was discussed some years ago. Gemma will check previous Planning/TC Minutes to see if a mission statement already exists. It was noted that TC 2.3's Scope may be inappropriate. Everyone was asked to go to the website, check out the Scope and send comments to Erik and Dean by the end of August.

All recent TC Minutes should be posted on the website (there are a few older ones only). The preferred format is .pdf since readers cannot change the posted text. Marilyn and Gemma have Adobe Writer which is necessary for transforming to this format and are willing to work on this. The most important Minutes are the most recent ones, which Dean has. Dean will send copies to Erik.

Back in 2001, the Planning Committee prepared a draft survey for posting on the web and publishing (where this could be done at no cost). Dean agreed to get the survey from Doug and review it so that we can reactivate this task.

TC 2.3 Mission Statement

A TC 2.3 (KJ Choi) has commented on the Mission Statement for TC 2.03 that it should consider including the following three sentences after the TC 2.03 SCOPE

- TC 2.3 recognizes the continuing need for basic education and training to individuals, academia, and related industries.

- TC 2.3 needs to continue to encourage fundamental and basic research, and to promote continuing education and training.
- TC 2.3 needs to communicate effectively to its constituency with the mission of building its membership.

These points were made very late in the TC 2.3 meeting and will be discussed and voted on at the next TC meeting.

Website (www.ashrae.org) (Erik, Chair, reporting)

Comments can be submitted on the web. Web based commenting will be operational for all standards up for review starting in March.

ASHRAE TC link is missing-is being fixed.

New Business:

- **Copenhagen Show in August**
- **Leed-Chris Muller**
 - Cant use IAQ procedure for LEED certification
 - Recommend committee sends letter to US green building council (specifically the IAQ Tag), want an explanation for the exclusion for the IAQ procedure.

Motion: Send letter to US Green Building Council for explanation for the exclusion for the IAQ procedure

Made By: Nick

Second: Gemma

Vote: For- 8/Against-0/ Abstain- 1, CVN

Discussion: electronic ballot so the members can comment on the letter

Jensen (EHC committee) ozone removal performance

Wants to write an RTAR for 2.3 for ozone removal filters-

Agenda Items for the Annual ASHRAE meeting in New York, NY

- No new business discussed.

Motion to adjourn was made and seconded.

Vote Results: For- 8/Against-0/ Abstain- 1, CVN

Meeting Adjourned at 15:30.