

ASHRAE MEETING MINUTES - Orlando

TC 2.3 - Gaseous Air Contaminants/Removal Equipment TC Meeting

Tuesday, February 8, 2005
13:00 - 15:30
Wyndham Palace Hotel – Westminster

NOTICE:

These meeting minutes have been approved and are official.

- The meeting was called to order at 13:00 pm by Chairman Eric Kuiper. The attendees that completed the meeting attendee sheet(s) were:

Name	Email address
(Voting Members)	
Karin Foarde	kkf@rti.org
Bob Hendry	bob.hendry@gtri.gatech.edu
Gemma Kerr	gemma.kerr@inairenvironmental.ca
Ez Khalifa	ez@ecs.syr.edu
Brian Krafthefer	brian.krafthefer@honeywell.com
Eric Kuiper (Chairman)	erik@mail.ashrae.org
Matt Middlebrooks	mmiddlebrooks@bbafiberweb.com
Chris Muller	chris_muller@purafil.com
E.C. "Chuck" Schroeter	fsifla@bellsouth.net
Paolo Tronville	paolo.tronville@polito.it
Derald Welles	dwelles@ix.netcom.com
(Corresponding Members)	
Ron Domitrovic	rdomitrovic@atmosphericglow.com
Marilyn Listvan	listv001@umn.edu
William Lull	TC23@garrisonlull.com
Jim Moulton	jmoulton@hovo.com
Jeff Roseberry	jeffr@promarkassociates.com
Dean Tompkins	dtompki@wisc.edu
Doug VanOsdell	dwv@rti.org
(Guests)	
Susan Brandes	brandesd@utrc.utc.com
Monroe Britt	mbritt@clair.com
H.E. Barney Burroughs	heburroughs@mindspring.com
Wenhao Chen	Wchen13@syr.edu

Kyung-Ju Choi	kchoi@aafintl.com
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Michael Corbat	mcorbat@filtrationgroup.com
Steve Donagh	stephanm@doh.state.ri.us
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Mark Renn	mrenn@aafintl.com
Charles Seyffer	cseyffer@nycap.rr.com
Dave Witham	dave-w@uvdi.com
Phil Winters	pwinters@filtrationgroup.com
Terri Wytko	twytko@ari.org
Harry Youdell	hyoudell@pureatech.com
Jensen Zhang	jszhang@syr.edu

- Attendee' self-introductions were made.
- Minutes to be published within 60 days following the minutes.
- TCs should target 2 programs each meeting.
- Roster check was made. Voting members present at the TC meeting include:

- 1) Eric Kuiper (chair)
- 2) Brian Krafthefer
- 3) Bob Hendry
- 4) Gemma Kerr
- 5) Karin Foarde
- 6) Derald Welles
- 7) Chuck Schroeter
- 8) Chris Muller
- 9) Matt Middlebrooks
- 10) Paolo Tronville
- 11) Ez Khalifa

Dr. Paul Nelson and Nick Agopian were absent. A quorum was achieved with 11 voting members present out of a total of 13.

Corresponding Members Present – 7
Voting Members present – 11
Guests – 25

Total -

43

- A motion was made and seconded to approve the meeting minutes of Nashville. There was no discussion. **Voting on approval of the Nashville minutes was as follows: 9, 0, 1, 3, 13 (for, against, abstain, absent, total).**

Subcommittee Reports Made:

Planning (Dean Tompkins, Chair)

- A review of the Kansas City Planning Sub-committee minutes provided for discussion of Planning's goals/aims:
 - How (sponsored) ASHRAE research affects TC 2.3 gas-phase
 - How to reach the "grass roots" (or ASHRAE members) re: gas-phase remediation
 - Develop a Primer as educational materials for introduction into gas-phase remediation
 - Develop a document on how to perform "trouble-shooting" on a gas-phase remediation installation
 - How to Model fair cleaners in buildings
 - How to dispose of used materials?
 - Develop a Survey for soliciting information from "grass roots" members/customers/end-users.
- A review of the action items from Nashville suggested that the Powerpoint/PDF-based TC 2.3 presentation (originally developed by D. VanOsdell) be revised into two presentations:
 - 1) A brief (~15-min) discussion of TC 2.3 – Who and What We Are?
 - 2) TC 2.3 – Longer tutorial on gas-phase contaminants and removal theory and practice.
- Discussed the continued development of a road map for TC 2.3. The idea of collaborating with TC 2.4 to produce a complete filtration presentation was discussed. There seemed to be some consensus on accomplishing this with TC 2.4, because the concept of filtration by most individuals immediately focuses on particle filtration.
- The idea of presenting a seminar for gas-phase filtration was discussed; e.g.: J. Copley's proposed seminar for Denver on "Getting Back to Basics" will support one of the Planning's goals.
- There was some desire expressed to compile all the Planning meeting minutes so that it can be posted. It was discussed that the first TC 2.3 planning meeting was the Boston meeting (June, 1997). The first minutes from the main meeting minutes was in Minneapolis, possibly earlier.
- KJ Choi expressed that *education* and *communication* should be integral to the scope and mission statement of the TC 2.3 Planning sub-committee. Other committee members present concurred.
- Action Items from this meeting include:
 - D. VanOsdell to re-send his TC 2.3 tutorial presentation (PDF format) to sub-committee members. Limited dissemination of the presentation is encouraged at this stage because the presentation has not been reviewed.

- M. Listvan will assist D. VanOsdell in reviewing the TC 2.3 presentation, with the possibility of using it for future needs (e.g., ASHRAE Seminar, other).
- Review the Survey Form from 2001, combine it with the Survey Form handed out by D. Tompkins at this meeting. It would be the desire to send out this Survey Form to TC 2.3 members. Also:
 - An effort by N. Agopian, E. Kuiper, and M. Listvan will occur to place the Survey Form onto the TC 2.3 web-site. It is believed that the survey should take no longer than about 5-10 min to complete. There was brief mention of how to encourage individuals visiting the TC 2.3 web-site to fill out the survey.
- B. Krafthefer will send D. Tompkins information regarding the development of a scope, mission statement, and all past meeting minutes for the Planning Sub-committee. D. Tompkins and E. Kuiper will draft long-term plan and present it at the Denver sub-committee meeting.
- The TC 2.3 Website sub-committee chair (N. Agopian) will consider scanning all past TC Meeting Minutes so that they can be posted onto the TC 2.3 web-site.

Membership (Nick Agopian, Chair, Report made by Dean Tompkins)

Four current voting members will be rolling off after the June Meeting in Denver – Nick Agopian, Brian Krafthefer, Paolo Tronville, and Gemma Kerr. Those wanting to become voting members will notify Eric or Nick by February 16 to be considered after the Denver (June 2005) ASHRAE meeting. The current TC 2.3 leadership team is:

- Chair – Eric Kuiper
- Vice Chair – Dean Tompkins
- Secretary – Matt Middlebrooks
- Research – Karin Foarde
- Planning – Dean Tompkins
- Membership – Nick Agopian
- Standards – Brian Krafthefer
- Program – Dean Tompkins
- ALI Coordinator (ASHRAE Learning Institute) – Doug VanOsdell
- Handbook – Gemma Kerr
- International – Paulo Tronville, Eric Kuiper
- Website – Nick Agopian
- Publications – Marilyn Listvan

Meeting attendees desiring to become corresponding members were asked to indicate this on the meeting attendee sheet(s) and to Dean Tompkins / Nick Agopian.

Research (Karin Foarde, Chair)

The TC 2.3 Research Subcommittee meeting time slot will be moving from 16:00–18:00 to 17:00–19:00 on Sundays.

Presentation / Up-date on Current Research Project(s):

- Re: 1243-RP – “Detection And Measurement Of Gaseous Byproducts Of Fungal Growth That Affect Indoor Environments – Phase II [Principal Investigator – Don Cortes/Elliot Horner (Air Quality Sciences, Inc.; Atlanta, GA) [PMC – Karin Foarde (Chair), Brian Krafthefer, Marilyn Listvan, Gemma Kerr, and Charlene Bayer]:”
 - Don Cortes, AQS provided an update on the project. AQS anticipates that the project will finish at the end of this month (Feb. 2005).
 - **Project Update: Objectives** –
 - (1) Develop MVOC database,
 - (2) Improve Sampling Protocol, and
 - (3) Expand useable MVOC list. Qualitative results were presented only; no quantitative results. Presently, the MVOC list consists of about 20 or less compounds.
 - **Four TASKs** with this project:
 - **Task 1)** Identify MVOCs from known molds on building materials.
 - **Task 2)** Determine MVOCs under realistic building conditions and establish sampling, (Collected 18 liters over 90 min with TENAX tubes; then thermal desorption with pre-concentration.)
 - **Task 3)** Validate methodologies in real building environments,
 - **Task 4)** Deliver useable database to ASHRAE.
- 1098-RP – Two papers from 1098-RP have been reviewed and are scheduled to be presented in a (TC 2.3-sponsored) Symposium in Denver (Annual Meeting, 2005) with Marilyn Listvan as (Chair).
- Work Statement WS-1302: “Comparison GPAFE Lab-Tests to Field Experience”, was submitted on Feb. 10, 2004, went out for bid, and there were two bids (PES: Matt Middlebrooks (Chair), Bill Lull, Gemma Kerr, Phil Winters). The PES evaluated the bids and brought forward a recommendation to accept one of the bids.

The TC met in executive session to discuss the recommendation. A motion was made to accept the recommendation of the PES. Vote to accept recommendation of the PES was 10, 0, 1, 2, 13.

RTARs:

- **RTAR #2005-44** (Title: How would gas-phase/particulate filtration equipment protect against an external/internal release of threat agents) was returned with comments. Comments given to Nick Agopian and he will resubmit. Brian Krafthefer, Charlene Bayer, E. Horner, and Matt Middlebrooks will assist in the re-write.
- **RTAR #2005-42** (Title: Inter-Laboratory Evaluation of Test Method for Gas-Phase Air Cleaning Media in Support of Approval of ASHRAE SPC 145.1) was accepted. Chris Muller and Paolo Tronville will write the work statement and send out survey for labs.
- **RTAR #2005-43** (Title: By-product production from photocatalytic oxidation associated with indoor air cleaning devices) was accepted. Bob Hendry will resubmit.

- **2004-2005 Research Plan**

The request was put out by Karin Foarde to bring good research ideas to the Annual ASHRAE meeting (Denver, June 2005).

Program (Dean Tompkins, Chair)

- **Programs presented in Orlando (February 6 - 9, 2005):**

SEMINAR 14: Emerging Standards for AMC in Cleanrooms (co-sponsor TC 9.11; Chair: Matt Middlebrooks)

SEMINAR 51: Filtration for Improved Indoor Air for Hospitals (co-sponsor TC 2.4; Chair: Chuck Schroeter)

SYMPOSIUM OR-05-17: IAQ - Filtration (co-sponsor TC 2.4; Chair: KJ Choi)

- **Program items for future meetings were prioritized through votes of attendees as follows:**

DENVER, CO (June 25-29, 2005)

1. **SEMINAR:** Gas Phase Filtration: Back to Basics (Chair: John Copley)

2. **FORUM:** Development of Worldwide Filtration Standards (co-sponsor TC 2.4; Chair: Paolo Tronville)

3. **FORUM:** Review/Update on Odors (Chair: Brian Krafthefer)

4. **FORUM:** Filtration/IAQ for Schools (co-sponsor TC 2.4; Chair: Tom Justice)

SYMPOSIUM: Applications of UV Photocatalysis for Gaseous Contaminants (Chair: Marilyn Listvan)

Deadline for online program submittals for Denver is February 18, 2005.

A motion was made and seconded in the TC to accept the list above, ranked in order shown above, for Programs for Denver. Voting Results: 9, 0, 1, 3, 13 (For, Against, Abstain, Absent, Total).

CHICAGO, IL (January 21-25, 2006)

SEMINAR: Gas-Phase Filtration: Case-Studies (Chair: Dean Tompkins)

SEMINAR: Proper Application of UVC Lights (co-sponsor TC 2.4; Chair: Mort Blatt)

FORUM: Measurements of Gas-Phase Contaminants: Who's Kidding Whom? (Chair: Bill Lull)

FORUM: Filtration for LEED/Green Buildings (co-sponsor TC 2.4; Chair: Marilyn Listvan)

FORUM: Filtration for Homeland Security (co-sponsor TG2.BCBR?, TC 2.4; Chair: Brian Krafthefer)

QUEBEC CITY (June 24-28, 2006)

SYMPOSIUM: Evaluating and Measuring Performance of Gas-Phase Cleaning Devices
(Chair: Fariborz Haghighat)

SYMPOSIUM: VOC Emission / Adsorption & IAQ (co-sponsor TC 4.10; Chair: Gemma Kerr)

SEMINAR: Emerging Gas-Phase Cleaning Technologies (Chair: KJ Choi)

FORUM: Filtration/IAQ Needs for . . . Marine Environments and Cruise Ships (Co-sponsor TC 9.11?; Chair: Charlie Seyffer) Need to discuss topical challenges.

Handbook (Gemma Kerr, Chair)

- Ch. 13 – Was submitted in Sep. 1, 2004.
- Ch. 12 – Was submitted in Oct. 2004 and is ready to sign-up.
- Chuck Schroeter (Chapter 24, 2004, E165):
 - No action; nothing to vote on.
 - More interactive, Equations, etc., Principles of filtration, animation desired... likely from Manufacturers.
- Ch. 45 – Doug VanOsdell is leading the re-write of Ch. 45 – “Control of Gaseous Indoor Air Contaminants” (Due: March 2006).
 - Case Studies needed for Ch. 45. Candidate individuals to first author this include:
 - Chris Muller may have one developed in which is tied into Standard 62.
 - Nick Agopian may have one developed for smoking spaces (Brian Rock has developed a start with an ASHRAE special publication).
 - Look for case study where the outdoor air is real poor.
 - Another Issue – Price (Economics), Pressure Drop, Performance (Marketing). Brian Krafthefer and Matt Middlebrooks will collaborate on this issue and send something to Doug VanOsdell.
- Fundamentals Handbook Liaison (Dennis O’Neal) – Dennis O’Neal indicated he thought that we were in good shape with respect to being on-time with updates to the Handbook.

Standards (Brian Krafthefer, Chair)

- B. Krafthefer handed-out a compilation of IAQ recommendations and/or developing standards and requested additional input.
- E. Kuiper (Chair TC 2.3) reported that both PPIS and Standards approved a new guideline – Guideline (GPC-27P) “Measurement Procedure for Gaseous Contaminants in Indoor Environments.” Bill Lull was proposed as the chair for this guideline. First meeting will be at the summer meeting in Denver.

A motion was made and seconded to elect Bill Lull to be Chair of GPC-27P. The vote was 9, 0, 1, 3, 13 (For, Against, Abstain, Absent, Total).

- Jim Moulton provided an update for SSPC 62.1 – Dave Butler remains Chair. Four sub-committees have been formed for 62.1. SSPC 62.1-2004 incorporates all the addenda up

- No update was provided on SSPC 62.2. Barney Burroughs will be designated as the official TC 2.3 liaison for 62.2.
- SPC 145
 - 145.1 (Media Method of Test): The sections that were reviewed include the Report Form, Section 8, References (Sec. 10), Appendix, and the Forward. End of March 2005 is targeted as a time period to finish review of Sections 8 and 10. The Appendix will seek to incorporate several issues – gas-phase filtration theory, information on test gases, examples, gas generation procedures and guidelines, class of measurement instrument types, guidelines for the test apparatus, tubing, etc., and justification for testing at 100 ppmv instead of indoor-air concentrations (~1 ppmv and lower).
 - 145.2 (Test Duct Method) – No real change in status. Doug VanOsdell expects that SPC 145.2 will be originated via converting a Method of Test developed for a government project. Doug indicated that he expects the government to allow release of the Method of Test in the next 6 months.
- SPC 161 – Eric Kuiper indicated that SPC 161 was sent out for public review since the last ASHRAE meeting (June 2004 – Nashville). However, it was sent back to the committee because the standard has a lot of informative appendices, and ASHRAE requested that the appendices be placed into a Guideline.
- Paolo Tronville provided an update on the CEN Standards:
 - European standard for gas-phase devices.
 - United Kingdom has a strong interest in the standard (TC 195): Air filters for general cleaning. This working group has impact on the micro-electronics industry.
- Paolo Tronville provided an update on the European Standards:
 - There is an ISO Test Method (or Technical Specification) (11155-2). After 5 years (2007) it has to be decided on whether this Test Method will be adopted as a standard.
- Brian Krafthefer did not provide an update on the Military or State Department standards, but will at the Annual Meeting Denver.
- Matt Middlebrooks provided an update on the IEST (Institute for Environmental Sciences & Technology), which is the secretariat for the ISO standards for the clean rooms. Recommended Practice CC-035 (Design Considerations for AMC Filtration Systems in Cleanrooms) is about 60-70% complete, but work has been lagging lately. There is an ISO 14644-8 standard (AMC Contaminant Classification) that has been released for clean-rooms and is directly applicable to TC 2.3 for Airborne Molecular Contaminants.
- Nick Agopian was not present and therefore no updates were provided standards in Asia, Hong Kong, Singapore, and Australia.
- New Business:
 - Paolo Tronville indicated that he co-authored (w/ Dick Rivers) a manuscript entitled “Air Filter Test Standards in a Global Environment.” With involvement by Fred Turner and Marilyn Listvan, it is believed that the manuscript can be adjusted in length and some scope for possible publication in an ASHRAE publication.

Publications (Marilyn Listvan, Chair)

- The joint TC 2.3/2.4 Publications Meeting was held and had 11 members present.
- ASHRAE publications (Steve Comstock, Business Manager of ASHRAE) has informed Marilyn Listvan that documents can be scanned back to 1986 and combined into a CD. There were volunteers at the meeting to scan in documents with appropriate software so that the documents are searchable.
- Karin Foarde will attempt to convert an ARTI report into an ASHRAE Journal article on UV light.
- Gemma Kerr may produce (1) a second manuscript for ASHRAE TRANSACTIONS based on work for RP-961, and (2) “How to investigate Odor Problems in Real Buildings.”
- Dean Tompkins – There will be two Symposium papers (Denver) from RP-1098.
- Karin Foarde – provided a manuscript for pub in trade magazine based on RP-909.
- Art Hallstrom mentioned the need for article(s) on impact of 90.1 on filtration selection – filter drop issues, dirty filters.
- Paolo Tronville and Dick Rivers have produced a publication on International standards. The desire is that this publication may be used to produce an article for Pubs.
- Extended discussion on whether there are ISO standards? (e.g. ISO TC 146 ... Met in 1986)
- KJ Choi and Charlie Seyffer (Camfil Farr) – HVAC overview: Where’s the filter? Residential vs. commercial? How many? Where to put it?

Website (www.ashrae.org) (Nick Agopian, Chair – Absent, Report by Eric Kuiper)

- ASHRAE has been directing the website to the wrong link and people have been viewing the old TC site for the last 8 months or so. ASHRAE has been contacted to correct the link.

TC Liaison Work:

62.1-2004 now requires air cleaning in non-attainment conditions (ozone and PM10), but uses the old NAAQS standard so its impact is somewhat diluted.

New Business:

A Motion from a regional Chapter requests that TC 2.3, 2.4, 5.4, and SSPC52 develop a set of standards for testing the performance of industrial air filtration systems used to re-circulate air back into occupied spaces. We will respond that SPC145 is developing a test method for comparison of gas cleaning filters and TC 2.3 will not be developing additional standards at this time.

No nominations were received for the Hightower Award for research.

Brian Krafthefer was made an ASHRAE Fellow during this session.

A motion was made and seconded to adjourn the meeting. The voting results: 10, 0, 1, 2, 13 (for, against, abstain, absent, total).

Meeting adjourned at 15:00.