

ASHRAE MEETING MINUTES - Chicago

TC 2.3 - Gaseous Air Contaminants/Removal Equipment TC Meeting

Tuesday, January 24, 2006

13:00 - 15:30

Palmer House Hilton Hotel – Parlor B (6th Floor)

NOTICE:

These meeting minutes have been approved and are official.

- The meeting was called to order at 13:15 pm by Chairman Erik 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 |
| Eric Kuiper (Chairman, International) | erik@mail.ashrae.org |
| Chris Muller | chris_muller@purafil.com |
| E.C. “Chuck” Schroeter | fsifla@bellsouth.net |
| Paolo Tronville (International Member) | paolo.tronville@polito.it |
| Derald Welles | dwelles@ix.netcom.com |
| Nick Agopian | nagopian@dectron.com |
| (Corresponding Members and Guests) | |
| Marilyn Listvan | listv001@umn.edu |
| William Lull | TC23@garrisonlull.com |
| Jeff Roseberry | jeffr@promarkassociates.com |
| Dean Tompkins | dtompki@wisc.edu |
| Doug VanOsdell | dww@rti.org |
| Monroe Britt | mbritt@clair.com |
| H.E. Barney Burroughs | heburroughs@mindspring.com |
| Kyung-Ju Choi | kchoi@aafintl.com |
| John Copley | jcopley@customfilter.net |
| Joe Enneking | Joe.enneking@nucon-int.com |
| 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 |
| Julie Ferguson | jmferguson@adiflorida.com |
| Chang Sohn | c-soh@cecer.army.mil |
| Paula Leuasseur | paula@cglcarbon.com |
| Stan Slabinski | sslabinski@bry-air.com |
| Dave Branson | djbranson@csg.net |
| Colin Branson | colin@bransons.org |
| Mort Blatt | mhblatt@earthlink.net |
| Chuck Dunn | cdunn2@lumalier.com |
| Steve Slayzak | steve_slayzak@nrel.gov |
| Mark Stutman | stutmanm@camfilfarr.com |
| Stephen Martin | smartin1@cdc.gov |
| Mike Vaughn | morts@ashrae.net |
| Art Soma | art.soma@huntermfgco.com |
| John Vunovich | John.Vunovich@huntermfgco.com |
| Gary Phetteplace | gephet@crrel.usce.army.mil |
| Dave Chosnowski | davidc@uic.edu |
| | |
| (Liaisons) | |
| Brian Rock (Applications Chapter Revision) | hvacman@ku.edu |
| | |

- Attendee' self-introductions were made.
- Liaisons were given the opportunity to give their report(s). See below for written text on the individual reports.
- Minutes to be published within 60 days following the minutes.
- Roster check was made. Voting members present at the TC meeting include:
 - 1) Erik Kuiper (Chair and International Member)
 - 2) Bob Hendry
 - 3) Karin Foarde
 - 4) Derald Welles
 - 5) Chris Muller
 - 6) Ez Khalifa
 - 7) Dean Tompkins
 - 8) Ron Domitrovic
 - 9) KJ Choi
 - 10) William Lull

Three voting members were absent Chuck Schroeter, Brian Rock, and Matt Middlebrooks. Rolling off after Quebec City is Derald Welles. Emergency roll-on was/will be/ Mark Stutman. **A quorum was achieved with 10 voting members present out of a total of 13.**

Voting Members present – 10

A motion was made and seconded to approve the meeting minutes of . There was no discussion. Voting on approval of the Denver minutes was as follows: **Voting Results: 9, 0, 1 (Chair Not Voting), 3, 13 (For, Against, Abstain, Absent, Total).**

| | |
|------------------------|------------------------------|
| For – | 9 |
| Against – | 0 |
| Abstain – | 1 (Chair, not Voting) |
| <u>Absent –</u> | <u>3</u> |
| Total – | 13 |

MOTION APPROVED.

Subcommittee Reports Made:

Planning (Dean Tompkins, Chair, was absent; Eric Kuiper provided the report)

- Presentations to be finalized for the ASHRAE Chapters so we can promote ourselves.
- Finalize the survey form which has been under development for a couple of years.
- Suggest a forum for Program of why we don't practice Good IAQ air-cleaning.
- Make use of a Canadian study in which the IAQ impacts productivity.
- Check California Education with regard to Air Quality and school attendance.
- Check with Jim Woods on an ARI study – cohort study of interviews of teachers and students.
- The intent is to put the information into PLANNING and then into the TC 2.3 Website.
- Get Stacia's and Mort's information on the school attendance issues into PLANNING.

Membership (Nick Agopian, Chair, reporting)

- Rolling-on to TC 2.3 will be Nick Agopian. Also, Mark Stutman will be rolling-on as a voting member for Brian Rock.
- Rolling off TC 2.3 will be Brian Rock and Matt Middlebrooks. Also rolling off will be Derald Welles and Erik Kuiper (international member).
- Paolo Tronville will be rolling-on as an international and a voting member and replacing Erik Kuiper.
- The TC 2.3 secretary will be Nick Agopian after the Chicago (Jan 2006) ASHRAE meeting.
- Each member present is encouraged to become a corresponding member.

The current TC 2.3 leadership team is:

- Chair – Erik Kuiper
- Vice Chair – Dean Tompkins
- Secretary – Nick Agopian
- 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

Research (Karin Foarde, Chair, reporting)

- The Research Subcommittee met from 17:00-19:00 hours in Chicago on Sunday (22 Jan 06).
- ASHRAE has available on its web-site the ASHRAE (overall) Research Plan. It is an excellent over-arching view of all of ASHRAE’s current research interests. Members are encouraged to visit the ASHRAE web-site to observe this document.
- Presentations/Up-Dates on Current Research Projects were Made:
 - a. 1243-TRP “Detection and Measurement of Gaseous Byproducts of Fungal Growth That Affect Indoor Environments – Phase II.” Don Cortes/Elliott Horner, AQS. [PMC – Karin Foarde (Chair), Paul Nelson, Brian Krafthefer, Marilyn Listvan, Gemma Kerr and Charlene Bayer.] Objectives are to develop MVOC database, improve sampling protocol, and expand usable mVOC list. The final report was received at ASHRAE in September, but the PMD did not receive until November. Elliot Horner attended to answer questions from the PMC. The PMC will recommend accepting the report with editorial changes. AQS will prepare a paper for submission to ASHRAE.
 - b. 1302-TRP “Comparison of Gas Phase Air Filtration Equipment (GPAPE) Lab Tests to Field Experience.” Principal Investigator – Donald H. Stedman, University of Denver [PMC – Gemma Kerr (Chair), William Lull, Phil Winters, Paulo 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 GPAPE designs at both accelerated (high challenge concentration) and application (very low challenge concentration) conditions within a laboratory setting. Ed Wolfrum (NREL) gave the presentation. The project is on scope and nearly on schedule. The PMC is concerned that the project name does not accurately reflect the scope and has requested a name change if possible.
- Work Statements & RTARs
 - a. RTAR# 2005-43 “By-product Production from Photocatalytic Oxidation Associated with Indoor Air Cleaning Devices” has been accepted. Bob Hendry prepared a work-statement. The WS was submitted to the Section 2 liaison to RAC on 8/8/05 but did not receive a response so it was not voted on or submitted. The current status will be determined.
 - b. RTAR#2005-42 “Inter-Laboratory Evaluation of ASHRAE SPC 145.1P Test Method for Gas-Phase Air Cleaning Media” was not submitted by 8/15/05 and has been dropped.
- New RTARS
Determining/evaluating the remaining life of filterbed material – William Lull will draft this text. The goal is for it to be complete by the next submission date.

- **Research Plan**

Time was taken to gather new research ideas at this meeting. At the summer meeting more ideas will be added to these, a champion (individual) will be identified for each, and the ideas will be prioritized by subcommittee vote. The top 3 ideas will be selected for the champions to prepare RTARs for submission to ASHRAE. New ideas will also be added in the summer.

New Research (Plan) Ideas include:

- Extrapolate small mesh material to large mesh material used in actual devices.
- Industrial air cleaners (high load challenges)
- Cleanroom (very light loads) AMC
- How far can our current knowledge be extrapolated?
- High efficiency gas phase filters.

TC 2.3 2004-2005 Research Plan

| Projects | Person Responsible | Priority |
|---|---|-----------------|
| Inter-Laboratory Evaluation of ASHRAE SPC 145.1P Test Method for Gas-Phase Air Cleaning Media | Chris Muller, Paolo Tronville, Nick Agopian | 1 |
| By-product production from photocatalytic oxidation associated with indoor air cleaning devices | Bob Hendry, Brian Krafthefer, Gemma Kerr, Erik Kuiper | 2 |

TC 2.3 2005-2006 Research Plan

| Projects | Person Responsible | Priority |
|---|--|-----------------|
| Determining/evaluating remaining life of filterbed material | William Lull, Gemma Kerr, Nick Agopian | 1 |
| How would gas phase/particulate filtration equipment protect against an external/internal release of threat agents | Nick Agopian | 2 |
| Investigate filters for 2 nd hand smoke – Determination of contaminants of concern & ETS removal effectiveness for SSPC 62 | Nick Agopian | 3 |
| Real lab environment comparison tests of PCO vs. carbon filter (flow, pressure drop, RH, temperature, multiple VOCs, etc.) | Dean Tompkins | 4 |
| Energy Implications of IAQ Measures: A Comparison | Brian Krafthefer | 4 |

A motion was made to approve the FINAL Report for 1243-TRP as described above.

Voting Results:

| | |
|------------------------|--|
| For – | 9 |
| Against – | 0 |
| Abstain – | 1 (Chair Erik Kuiper, not Voting) |
| <u>Abesnt –</u> | <u>3</u> |
| Total – | 13 |

MOTION APPROVED.

- Bill Lull remarked that at the TC 8.12 (formerly TC 3.5) – sorbents and desiccants – there are some research projects that need to be considered for co-sponsorship by TC 2.3 including:
 - Odor Retention and Release from Heat Recovery and Desiccant Wheels. [Seeking co-sponsorship - Steve Slazak. This project involves the use of sorbent materials and technology as air cleaners. It is a take-off from ASHRAE 475-RP (University of Missouri).]
 This issue should be voted on at the next TC 2.3 Research Subcommittee meeting.

Program (Dean Tompkins, Chair, reporting)

- Program(s) presented in Chicago (January 21-25, 2006):
 - SEMINAR 3:** Field Test Results for UV Systems (co-sponsor: None; Chair: Mort Blatt)
- Program items for future meetings were prioritized through votes of attendees as follows:

QUEBEC CITY, CANADA (June 24-28, 2006)

SYMPOSIUM/TRANSACTION: Evaluating and Measuring Performance of Gas-Phase Cleaning Devices (Co-sponsor: none; Chair: Fariborz Haghighat)

1. **SEMINAR:** Gas Phase Filtration: Case Studies (Co-sponsor: none; Chair: Chris Muller/Dean Tompkins)
2. **SEMINAR:** Emerging Gas-Phase Cleaning Technologies (Co-sponsor: TC 2.4 and TG2.UVAS ; Chair: KJ Choi)
3. **SEMINAR:** Gas Phase Filtration: Case Studies (Chair: Chris Muller/Dean Tompkins)
4. **FORUM:** Measurements of Gas-Phase Contaminants: Input for GPC 27 (Chair: Bill Lull)
5. **FORUM:** Review/Update on Odors/Source(Chair: Brian Krafthefer)

A motion was made to approve the program and seconded in the TC to accept the list above, ranked in order shown above, for Quebec City. Voting Results:

| | |
|------------------------|-----------------|
| For – | 8 |
| Against – | 0 |
| Abstain – | 0 |
| <u>Abesnt –</u> | <u>5</u> |
| Total – | 13 |

MOTION APPROVED.

- There is discussion provided by the liaison for Programs of either (a) going to 1 ½ hour programs instead of 2 hours, or (b) dropping the Wednesday programs.
- Co-Sponsorship by TC 2.3 of Programs by Other TCs Requested
 - TC 5.12 is requesting sponsorship by TC 2.3 for SEMINAR on Standard 62.

- TG2.UVAS is requesting co-sponsorship of –
 - a) Seminar entitled UVGI Inactivation of Infectious Microorganisms
 - b) Forum entitled Choosing appropriate UVC Equipment for application.

A motion was made to approve co-sponsorship of the 3 programs above, and seconded, with no discussion. Voting Results:

| | |
|------------------------|---|
| For – | 9 |
| Against – | 0 |
| Abstain – | 1 (Chair Erik Kuiper not voting) |
| <u>Abesnt –</u> | <u>3</u> |
| Total – | 13 |

MOTION APPROVED.

Handbook (Gemma Kerr, Chair, reporting)

- TC 2.3 is responsible for three Handbook Chapters. Gemma Kerr reported that Handbook chapter activity is on-track.

Standards (Brian Krafthefer, Chair – Absent; Paolo Tronville provided the report.)

- GPC 27 - “Measurement Procedure for Gaseous Contaminants in Indoor Environments.” – Four official members were present; 3 will be added for a total of 7 members for its 1st official meeting in Quebec City. Desire to get 2 incursions on the outline. If interested in joining then you are encouraged to join and become active. The meeting is held from 15:00-17:00 on Sunday.
- 145.1 (Media Method of Test): An off-site meeting will likely be held either the 21st/22nd or 28th/29th of March 2006 on the NIST campus (Gaithersburg, MA), with Andy Persily offering to host the meeting. Anyone (committee members and others) are encouraged to attend. If you are interested in attending, then get your name to Chris Muller as soon as possible.
- 145.2 (Test Duct Method) – A draft of 145.2 has been submitted for review by folks. Doug Vanosdell strongly urges individuals from end-users (manufacturers, customers, etc.) to provide input regarding concentrations, species, . (William Lull suggested that 145.2 be allowed/worded/ to allow desiccant wheels to be fitted for a 2-ft x 2-ft rectangular test duct.)
- Standard 62 has a change request being made by the medical community so that the threshold be lowered for PM10 and ozone. Further input/discussion/ on this matter can be obtained by contacting Hal Levin.
- ISO Standard – ISO TC 142 is being re-activated. There will be opportunity for individuals who will be developing a true global standard. In the next few months there will be development of a new business standard. There was discussion of whether ASHRAE could be tagged . Chris Muller (Chair of SPC 145) offered that SPC 145 text/verbiage to assist with developing the ISO standard.

- SPC 185 – Test Method for testing Airborne Biologicals with UVGI (Derald Welles, Chair, reporting) - You have to ask to join the SPC. Met for the first time on Sunday; 7 members; sub-divided the committee into 2 given groups – 1) design the test rig, 2) identifying the group of organisms and concentrations.
- We need to find a new liaison for 62.1 in place of Scott Hanson. Now, Chris Muller is the new liaison.
- There is a public review for SPC 161 (Air Quality within Commercial Aircraft; Eric Kuiper reported) was on public review and there were no comments on gaseous removal equipment.

Publications (Marilyn Listvan, Chair, reporting)

A joint 2.3, 2.4 Publications Meeting was held 1/23 and had 12 members present. (see at end)

- IAQ Proceedings CD: ASHRAE publications (Steve Comstock, Business Manager of ASHRAE) has informed M. Listvan (and sent the volumes) that, documents can be scanned and combined into a CD. There were volunteers at the meeting to scan in documents with appropriate software so that the documents are searchable.
 1. '86 – Managing Indoor Air Health and Energy Conservation (blue cover) --- C. Seyffer scanned
 2. '87 – Practical Control of Indoor Air Problems (cream) --- C. Seyffer scanned
 3. '88 – Engineering Solutions to Indoor Air Problems (small red)---B. Krafthefer
 4. '89 – The Human Equation for Health and Comfort (orange) --- Vinoo Shorma (KCC)
 5. no '90
 6. '91 – Healthy Buildings (& post-conference proceedings) (turquoise/white)---Mark Stutman
 7. '92 – Environments for People (grey) --- M. Listvan
 8. '93 Operating & Maintaining Bldgs for Health, Comfort & Productivity (green) --- C. Seyffer
 9. '94 – Engineering Indoor Environments (turquoise) --- Jean Girard
 10. '95 – Practical Engineering for IAQ (orange) --- ??
 11. '96 – Paths to Better Building Environments (burgundy) --- Jim Moulton
 12. '97(?) – Design, Construction & Operation of Healthy Buildings --- Scott Hanson
Solutions to Global
- Action item Charlie Seyffer/ M. Listvan: Finalize & send detailed scanning instructions to all.

*******April 30, 2006 deadline for scanned files back to Marilyn*******

PDF format, Scan from within Acrobat (open New.....) We can use bookmarks to link sessions.

Judicious use of defined KEYWORDS will make this useful (or not)
They need to be scanned 600 dpi with optical character recognition OCR.
- Action Item for Marilyn: Verify with ASHRAE for a release to allow for a copy write release letter
- People willing: are listed above with the volumes they took (THANK YOU!)

Article topics and Authors were asked for (continued from 2/7/05 & 6/05 meetings) :

- K. Foarde will attempt to convert an ARTI report into an ASHRAE Journal article on UV light effects
 - G. Kerr may produce (1) a second (and third) manuscript for ASHRAE TRANSACTIONS based on work for RP-961, and (2) an ASHRAE (IAQ Applications) Journal article on “How to investigate Odor Problems in Real Buildings.”
 - D. Tompkins – There will be two Symposium papers (Denver) from RP-1098.** or 1139 (done??)
 - Art Hallstrom in 2/05 mentioned the need for article(s) on impact of 90.1 on filtration selection – filter drop issues, dirty filters. (KJ was to work with Art.) ***Brian Krafthefer & Tom Justice interested.
 - Charlie Seyffer from Camfil Farr to work on a filter pressure drop article. (combine with previous?)
 - Continue Action Item for Marilyn: Please send KJ Art’s contact information. Note – it is on the minutes from 2/05 meeting.
 - KJ Choi and Charlie Seyffer (Camfil Farr) – HVAC overview: Where’s the filter? Residential vs. commercial. Used to rooftop units ... how many ... where to put it? (before the coil). Art Hallstrom needs to provide KJ with some info from his company.
 - In Process: Paolo Tronville and Dick Rivers have refined an article on International standards. The desire is that this publication may be used to produce an article for “Pubs credit”—is in Manuscript Central for review.
- **Action Item for Marilyn: Please contact Fred Turner to make sure that the article moves forward .
- Last time there was extended discussion on: Are there ISO standards for filtration? (ISO TC 142 ... Met in 1986): Paolo Tronville gave some background.
This has been voted on by the ISO committee to re-activate the committee. The committee will be working on standard for general ventilation, standard on HEPA and ULPA filters as well as Gas Phase and gas turbine intake filters and electrostatic filters.
- *** Action: It was suggested that Phil Winters keep notes on working with the ISO process and write an article on that experience.
- Paulo will put together a small summary for the ISO standard (ISO TC 142....?). Maybe we can put something into Insights.
 - Action Item to KJ/CS for the HVAC overview outline before August 15th 2005 (revised to 2006).
 - Action Item to Marilyn to contact KJ/CS for the HVAC overview before August 15th 2005(also to ‘06).
 - Action: “Use of Filtration in Process Applications.” Nick Agopian has info for two applications (Outdoor air for Semiconductors; Pulp & paper).
 - Need status: Jim Hanley has a paper drafted on 52.2 round robin (tech paper). Action Item: See if there is an interest in Jim to prepare a paper on this. He does have an executive summary already prepared. This executive summary can be used for the ASHRAE Insights or if too big...used for the Journal. Jim can be used for the Insights article and Jim for the full Journal article.
 - ASHRAE news releases. TC 9.5 did (Residential & small building applications): Allergies solutions: It’s your money. We need to do some of these for ASHRAE (Contact: [Jodi Dunlop](#) Phone: 678-539-1140)

Action Item for Marilyn(& Brian Krafthefer interested): work with 9.5 members—next possible joint News release: Who is MERV anyway??

“Who is MERV?” Al Veeck and Barney Burroughs to provide information to Marilyn and Jim Hanley and Eric Kuiper will help review information.

- ETS book is out, published by Elsevier, and is available through the ASHRAE book site.
- Mold prevention broadcast and a CD (not a book) is coming out (when??). But a book is for sale now on Molds and control issues (Holly Bailey, author).
- FTC needs to crack down on false claims by filter devices – should this be a FORUM? (Tom Justice)
- 52.1 “how to retire it” was discussed –Jim Moulton to explore doing AC Refrigeration News article from a USER standpoint (C. Seyffer has a contact there)

Website (www.ashrae.org) (Nick Agopian, Chair, reporting)

- Roster will be removed from the web-site; a new version of a members listing (name, rank in ASHRAE, affiliation) to protect/secure/ will be made available in two weeks at the web-site. New login section has not been completed, the new website design will be put together just after this winter meeting. All names and contact information will be removed as per new ASHRAE requirements.
- There are capabilities for Internet-based meetings (Microsoft Live Meeting); ASHRAE HQ can set-up network-based meetings. In the ECE meeting, a wireless hub could link together.
- ACTION ITEMS -- Nick will place hypertext-based links from the TC 2.3 web-site to salient web-sites on ASHRAE.
- **A motion to keep the possibility to have the TC 2.3 to be hosted on an independent (non-ASHRAE) server; motion is seconded; with no discussion. Voting Results:**

| | |
|------------------------|-----------------|
| For – | 10 |
| Against – | 0 |
| Abstain – | 0 |
| <u>Abesnt –</u> | <u>3</u> |
| Total – | 13 |

MOTION APPROVED.

- All sub-committee chairs desired to keep their current time slots.

TC Liaison Work:

- Marilyn Listvan (Publications Liaison) –
New database for electronic communications. You are urged to go on-line and check your own biographical/personal sketch. There was the opportunity to provide input on issues regarding electronic communications.
- Gary Phetteplace (Website Liaison) –
 - Get your activities sheet and your roster in on time.
 - Min of 2 papers; Max of 3 papers for a max 90-min TRANSACTIONS Program (formerly technical presentations and symposiums)

- TC 4.10 – Indoor Environmental Modeling (working on materials emissions). They are co-sponsoring a Symposium on emissions and IAQ. – “Modeling Adsorption of Building Materials.” Gemma Kerr will be an official liaison to TC 4.10.

New Business:

- Scoping Studies Effort - Looking for members; volunteers are encouraged to contact chair – Jeff Heberl
- Announcement of Up-Coming Conferences
 - Heat Pump Conference ...
 - RTI and Air & Waste Management Conference on IAQ in (17-19 July 2006)
- Agenda items for Quebec City ... none were offered.

A motion was made and seconded to adjourn the meeting. Voting results:

| | |
|------------------------|-----------------|
| For – | 10 |
| Against – | 0 |
| Abstain – | 0 |
| <u>Abesnt –</u> | <u>3</u> |
| Total – | 13 |

MOTION APPROVED.

Meeting adjourned at 15:10.