

AGENDA - ASHRAE MEETING – SEATTLE
TC 2.3 - Gaseous Air Contaminants/Removal Equipment
Main Committee Meeting

Tues., 1-Jul-2014, 1:00 pm–3:30 pm,

Metropolitan Ballroom B, Sheraton, Seattle

The meeting attendee list is as follows:

Last Name	Name	Member Status	Position	Present
Total Voting Members = 8 out of 15 in attendance				
Bayer	Dr. Charlene W. Bayer, PhD	V	Vice Chair	P
Choi	Dr. Kyung-Ju Choi, PhD	V	Program Chair	P
Campion	Dr. Christopher L. Campion	V		-
Flom	Mr. Michael C. Flom	V	Member	-
Grzywacz	Ms. Cecily M. Grzywacz	V-NQ	Member	-
Hafendorfer	Mr. Brian J. Hafendorfer	V	Member	P
Kerr	Dr. Caroline M. Kerr, PhD	V	Handbook Chair	P
Krafthefer	Mr. Brian C. Krafthefer	V	Handbook Vice Chair	P
Lau	Dr. Josephine Lau, PhD	V	Member	-
Lee	Dr. Chang-Seo Lee, PhD	V-NQ	Member	-
Lull	Mr. William P. Lull	V	Member	-
Middlebrooks	Mr. Matt Middlebrooks	V	Membership Chair	P
Schaaf	Mr. David A Schaaf, Jr	V	Program Co-Chair	P
Stanley	Mr. W. Brad M. Stanley	V	Chair	P
Tronville	Dr. Paolo M. Tronville, PhD	V	Standards Chair	
Owen	Ms. Kathleen Owen	NV	Research Chair	-
Roseberry	Mr. Jeff Roseberry	NV	Webmaster	-

1) Call to order at 1:03pm

- a) *Read ASHRAE Code of Ethics*
 - i) The ASHRAE Code of Ethics is to be adhered to by those doing ASHRAE business whether or not they are an ASHRAE member. The Code of Ethics can be reviewed at the following link:
<https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>
- b) *Introduction of guests and members.*
 - i) Brian Krafthefer is now serving as the TC 2.3 Secretary.
 - ii) Determination of Quorum:
 - (1) Voting Membership for this meeting: Brad Stanley, Charlene Bayer, Gemma Kerr, Matt Middlebrooks, Kyung-Ju Choi, Brian Hafendorfer, Brian Krafthefer, David Schaaf.
 - (2) 8 of 15 Voting Members present
- c) Reporting from ASHRAE liaisons
 - i) none present.

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- d) Report from Chair breakfast by Brad Stanley
 - i) 54% papers. 47% seminars accepted
 - ii) ASHRAE has got strategic plan out, other plans will be aligning with this. Will be available on web.
 - iii) ASHRAE wants members to update employment discipline. Only 28% of all members updated bio.
 - iv) ASHRAE Programs needs volunteers to lead tech sessions and be reviewers for tech papers. Also want track ideas for Orlando meeting. Come up to Brad Stanley after the meeting if want to volunteer.
 - v) ASHRAE will send out employer a thank you letter for your participation in the committees.
 - vi) ASHRAE OFFERS web seminars for TC subcommittee meetings–contact Mike Vaughn. Master calendar available (Google) for meetings.

2) Review and Approval of previous meeting minutes from NYC.

- a) *Typo needs correction.*
 - i) Action Item 5: 1557 should read 1457 (UV-PCO). Correct language is: RP-1457 (UV-PCO) PI to give TC2.3 a cost per cfm.
- b) Brian Kraftefer moved and and Matt Middelbrooks seconded to approve minutes as modified.
- c) Vote: 7-0-0-7-CNV-15 (For-Against-Abstain-Absent-CNV/CV-Total Voting Members)

3) Review of Action Items from Last Meeting

- a) Qualifying Need for a GPC to be developed related to Classification of Gas-Phase Air Cleaning Devices (carbon rating system)
 - i) Owner was Ashish Mathur.
 - ii) The working group's recommendation that a rating system is not possible at this time due to complexity. Action item of drafting a Title, Purpose, and Scope was halted.
 - iii) A forum this topic is being set up for Chicago
- b) Handbook Applications Chapter 46 – Clarification related to TC 2.9 being a reviewer.
 - i) This was an uploading error in 2011. TC 2.9 does not have a connection with the chapter.
- c) Publications Time Slot Conversion to a Forum's Time Slot.
 - i) Owner was Brad Stanley.
 - ii) The old time slot and room space had already been given to other committees and ASHRAE did not have room for the Seattle Conference. TC 2.3 will submit the room request earlier to try to get the space for the 2015 Winter Conference in Chicago, IL.
- d) Programs - Reminders
 - i) Reminder was made that program deadline of October 11 is coming up for Chicago.
 - ii) Discussion on workshop for 145.2. Possibility of having a seminar on this topic instead of a workshop.
- e) Project RP-1457 (UV-PCO) PI to give TC2.3 a cost per cfm estimate for running the UVPCO systems
 - i) Owner was Kathleen Owen.
 - ii) This was requested of contracted researcher, but given the status of this project, an estimate does not have a high probability of coming. Still waiting for final report.
- f) Website – Posting of Needed Items.
 - i) Owners were Jeff Roseberry and Paula Levasseur.
 - ii) The website is up with meetings, agenda on the site. The Minutes need to be posted no later than 60 days after the meeting. The Website maintenance has been transferred to Paula Levasseur's IT contractor. All needed updates have been done and all documents posted. Future revisions can now be easily made.

4) Status of Votes between Meetings

- a) Topic: Handbook Applications Ch 46 Submission for 2015
 - i) Motion: To Approve the Handbook Sub-committee's decision to submit Chapter 46 "Air Cleaners for Gaseous Contaminants" as it has been revised according to the discussion had in the NYC 2014 Winter Meeting.
 - ii) Result: Motion Passes; 12-0-1-0-CNV (For-Against-Abstain-Absent-CNV/CV)
- b) Topic: Voting for the Final Report from Syracuse for RP-1557

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- i) Motion: Matt Middlebrooks makes a formal motion as Chair of the PMS that TC 2.3 accepts this Final Report for RP-1557 and thereby completes the project. This Vote requires a 2/3 majority because it is related to research.
- ii) Results: >2/3 Approve, Motion Passes; 12-0-1-1-CNV (For-Against-Abstain-Absent-CNV/CV)

5) Subcommittee Reports

- a) Handbook - Subcommittee Chair Gemma Kerr
 - i) Complete Handbook Subcommittee minutes are attached below.
 - ii) Ch 46 is completed with the exception of a couple of minor items
 - iii) Ch 11 will be submitted 2016. There was a large amount of work during the last revision and the chapter review is moving quickly ahead.
 - iv) Ch 59 from TG2 is asking for help; if you are interested contact Barney Burroughs. Gemma Kerr & Brian Krafthefer volunteered to assist by being reviewers.
- b) Membership - Subcommittee Chair Matt Middlebrooks
 - i) There are currently 15 voting members and about a total of 75 total members. 3 will rotate off (Charlene Bayer, Cecily Grzywacz and Bill Lull), and 4 will rotate on (Paula Levasseur, Marilyn Listvan, Ashish Mathur and Kathleen Owen)
 - ii) The TC audience was reminded that in order to be a corresponding member they need to make a request to ASHRAE and the TC will pass along a recommendation. ASHRAE looks for at least one year as corresponding member before becoming a voting member and the TC looks for work done as while a corresponding member.
- c) Planning - Subcommittee Chair Charlene Bayer
 - i) Complete Planning Subcommittee minutes are attached below.
 - ii) There is a desire to attract new members and in particular new YEA members (there were 2 YEA in main TC audience)
 - iii) Discussion on how the website could be made more attractive and ways to add to the website.
 - iv) Permission has been received to do a short Blog (short 500 – 600 word article).
 - v) A TC Research Roadmap is being put together. Charlene Bayer, Brian Krafthefer, Brian Hafendorfer and Kathleen Owen will be on the committee. There is a need to have a mid-term webinar between TC officers and the roadmap will have to be started by then.
 - vi) It was suggested to have a TC-chair emeritus position for 1 year after being chair in order to provide insight for new chair. The current secretary will also help train in the new secretary.
 - vii) ASHRAE wants training modules. It was also discussed to ask ASHRAE to make short training modules on what to do in various TC positions in ASHRAE. There was a solicitation of ideas for training at the planning meeting and a request to send out an email to broaden this request.
- d) Professional Development Coordinator - Barney Burroughs
 - i) Barney has received information related to an air cleaning training module that will be put together this fall.
- e) Program - Subcommittee Chair KJ Choi
 - i) Complete Program Subcommittee minutes are attached below
 - ii) TC 2.3 is developing program submissions for the following:
 - (1) 4 for Chicago,
 - (2) 2 for Atlanta, and
 - (3) 2 for Orlando
- f) Publications - Subcommittee Chair Marilyn Listvan
 - i) The Seattle publications meeting slot was claimed. Will try to get the slot for Chicago. ASHRAE income is \$24M and \$10M of this comes from publications (\$2M of this in royalties). The rest comes from dues and registration.
 - ii) ASHRAE would like to have reviewers for its current publications. ASHRAE is also looking for reviewers of technical articles. Contact Tiffany Cox at ASHRAE.
 - iii) Marilyn is also collecting a list of TC member's bibliography papers. Please send bibliographies to her.
- g) Research - Subcommittee Chair Kathleen Owen – report by Paula Levasseur
 - i) Complete Subcommittee minutes are attached below.

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- II) Summary of Current Research
 - (1) 1457-RP “By-product Production from Photocatalytic Oxidation Associated with Indoor Air cleaning Devices” – awaiting final report
 - (2) 1720-WS “Validation of gas-phase air-cleaner performance test method (Standard 145.2) by laboratory testing of commercially available filtration devices”. - The WS has been drafted. We are currently requesting for SSPC 62.1 to cosponsor.
 - (3) 1579-WS “Testing and Evaluation of Ozone Filters for Improving IAQ”. – Awaiting the final report from the EHC research project RP-1491 to use as input into the types of filters to test in this WS .
 - iii) New RTARs:
 - (1) Low cost test to validate life of applied media - Ashish Mathur is champion
 - (2) Demand based air cleaner operations to save energy - Brian Krafthefer and and Jensen Zhang will draft.
 - (3) Current biometric rates for media- Chuck Savalli will draft
 - (4) Using specially treated textiles to reduce odors - Arshen Melcoff is champion – uses new materials to absorb odors before they enter air system
 - (5) Test method development on bipolar ionization - Charlie Wendell and Dean Tompkins. Kathleen Owen will work with them.
 - (6) Air emissions for unvented combustion air products – Comments have been requested when draft is finished. A letter ballot will also be coming out
 - h) Standards - Subcommittee Chair Paolo Tronville – report by Matt Middlebrooks
 - i) Complete Standards Subcommittee minutes attached below
 - ii) GPC 35 Report GPC 35: Method For Determining The Energy Consumption Caused By Air-Cleaning and Filtration Devices - TC2.4 has pushed a research project RTAR forward for the establishing the test dust. The GPC is awaiting the outcome of vote from RAC..
 - i) Website - Co-Subcommittee Chairs Jeff Roseberry and Paula Levasseur
 - i) Committee documents are now up on the web site
 - ii) The website will continue to be improved. One possible improvement is the blog mentioned in the planning subcommittee report.
 - iii) There is a need for more publications to be listed on the web site. The plan is to have an alphabetic index with links to possible purchasing locations.
 - iv) Please comment on the website. The suggestion was made to review TC2.4 for insight.
 - v) It was clarified that the website is the responsibility of the TC chair, so the TC Chair can give approval for content on the website.
- 6) Report from TC liaisons.**
- a) There were no TC liaison reports
- 7) New Business**
- a) Particle party tonight at Tap House Grille at 6:30PM.
 - b) Roger Schmidt IBM, TC9.9. Is working on research related to the Effects of High RH on Data Centers with Presence of SO₂, NO₂, O₃. TC 9.9 is developing an RTAR and would like to know if TC 2.3 is able to and interested in participating.
 - c) TC 2.3’s Comments
 - (1) Need to look at rapid change of temperature and water content as well as high levels.
 - (2) Chris Muller can act as liaison between 9.9 and 2.3.
 - (3) Straw poll was taken. 15 people voted that TC 2.3 participate in this, this was showing high support.
 - d) Barney Burroughs: TC2.3 does not have formal relationship with TG2. He stressed that TC2.3 should be participating. TC 2.3 members should also review Guideline 29-2009 - Guideline for Risk Management of Public Health and Safety in Buildings
- 8) Agenda suggestions for the winter meeting in Chicago.**
- a) No suggestions

9) Adjournment

- a) Charlene Bayer moved and Chris Muller seconded. Meeting adjourned at 3:18

ASHRAE MEETING MINUTES – SEATTLE

TC 2.3 - Gaseous Contaminants/Removal Equipment

Handbook Sub-Committee Meeting

Monday, June 30, 2014

4:15-6:00 p.m.

Washington State Convention Center, Room 611

Participants in the meeting were:

Name

Charlene Bayer
Dan Haas
Gemma Kerr (Chair)
Brian Krafthefer
Paula Levasseur
Ashish Mathur
Ramesh Paranjpey
David Schaaf
Brad Stanley

Ch 46 was submitted to ASHRAE. Gemma still needs by July 15th soft copies of figures 3A and 3B from Ashish Mathur, and of the IP units version of the example that was put together by Brian Krafthefer. Even with this late submittal the chapter will go out in time.

The date to submit Chapter 11 is March 15, 2016. Gemma Kerr had sent out a draft for review before the meeting and thought the first part of the chapter might be OK; but that everyone should complete their reviews. Small changes should be emailed to Gemma by the end of September. She also found 3-4 volunteers from TC2.4 Handbook Committee who will review particle contaminants section.

Participants then looked at the changes identified but not implemented in the 2013 edition of the Chapter. Table 2 on sieve sizes was discussed and it was felt that the table should be left in the chapter with some additional references on usage. Paula Levasseur will supply these to Gemma by July 31st.

It was agreed that Figure 3 should be extended down in size to the ultrafine region. Gemma Kerr will contact Kathleen Owen about getting copy of Table 3 that can be edited. Brian Krafthefer will also try to find a soft copy and new ultrafine materials for the Figure. Brian will also look for an additional particle person from TC2.4 that can sit during Chapter 11 meetings to help with the chapter. It was thought that it might be more effective to have a person actually present during the meeting.

Discussion on the non-industrial contaminant section brought about the suggestion for a name change for this section, e.g. Commercial and residential indoor air contaminants. It was proposed that everyone on the committee should review the section and bring comments to the next meeting.

Table 6 and 14 were discussed and the discussion revolved around reducing the number of contaminants in these tables. The committee will review these tables with the idea of reducing the number of rows. The columns of Table 6 were thought to be OK and the CAS numbers should be left. There was also discussion on boiling points and vapor pressures as to removing them from the table. Replacing them with descriptors such as VOC, SVOC, VVOC might make table more useful. There was also a suggestion to move Table 9 before Table 6. Gemma Kerr will review and provide more insight into this. There was also discussion on whether we should add more to SVOC information. Charlene Bayer agreed to review the SVOC section.

The ozone section was examined and it was thought to change the reference for the data in the table to Standard 62 instead of the EPA standard. It was also decided to remove the “Details” column from table 12. There was a question on whether EPA IAQ numbers should be included (from the IAQ index). Shortening Table 14 by reducing the number of rows was discussed also. The entries in this table need to be relevant to engineers.

Discussion of section on radon – Brian will review to see how the Rn symbol can be reduced per Bill Lull’s comments.

The meeting was adjourned at 5:55 pm.

TC 2.3 Gas-Phase Planning Subcommittee

ASHRAE MEETING – Seattle

Tues. 6:30 a.m. – 8:00 a.m. Medina (3 Sheraton)

Welcome and introduction of attendees:

Charlene Bayer
Brian Hafendorfer
Marilyn Listvan
Matt Middlebrooks
Stephany Mason
Brad Stanley
David Schaaf
Paula Levasseur
Gemma Kerr
Sanjeev Hingorani
KJ Choi
Brian Krafthefer
Ashish Mathur

Succession Planning for Officers. TC2.3 will now have a chair emeritus. This should help with providing insight to Committee leaders and members. Paula Levasseur has also volunteered to be the replacement secretary for TC2.3

Web page. <http://tc23.ashraetcs.org/activities.html> Paula Levasseur is redoing the web site with a thought to attracting younger ASHRAE members. The thought is to have no spreadsheet lists on the page, but there will be a list of publications with potential links (this will work with 30 – 40 publications). The page will be laid out for review. It should include the availability of publications. Suggestion to move all documented minutes to one page that says minutes. Order of minutes will be the order as seen in main committee agenda. A bookmark can be put into the minutes pdf file, but this will require Adobe Professional.

How to make TC2.3 more visible with YEA. Twitter is another method being thought of for communication during meetings. There are main TC meetings where twitter is currently being used.

There was discussion about setting up a blog for TC2.3.

Research Roadmap. There is a need for a research roadmap for the TC. The Research Table was uploaded and should help with the development of this roadmap. EHD has such a

roadmap. Volunteers to work on roadmap – Charlene Bayer, Brian Krafthefer, Brian Hafendorfer, A draft of the roadmap is planned to be done by the Chicago meeting.

Research. Our RTARs should be sent to RAC Liaison (Charley) for review before goes to the main TC for a vote. This will help the RTAR go through the RAC. A new direction of the research has been suggested – that it focus more on helping the consulting engineer.

The TC needs to continue to pursue new research directions. A number of new directions were brought up in the Research Subcommittee. At the research subcommittee meeting increased interaction with EHC was proposed by Pawel Wargocki through new research ideas generated by the EHC Air Cleaning Position document. New topic areas proposed for research ideas from the Research Subcommittee meeting are:

- Health
- SVOC & VOC emissions off of filters
- Different air cleaning technologies
- Bioeffluents
- Sensors
- New Specific Topics that may not have been discussed in Research Subcommittee meeting
- General Categories
- Performance Data
- Environment
- Sensors (IAQ, Filter Performance)
- Effective Measurement metrics

Action Items. We need to continue to be more responsible for our action items. We want to limit members to one major action item, i.e. writing an RTAR to increase performance in a timely manner. Brad tracking action items. On RTARs, if wanted 4 weeks before, Research chair will put together timeline for actions before meetings. Need research action item coordinator. Idea for mid-meeting telecon to make sure actions are being completed. We should also continue let old ideas without traction drop; look to items that we can put energy behind.

We need to have the subcommittee chairs ascertain that action items are being efficiently done. An idea is to have a subcommittee member help the subcommittee chairs monitor the performance of and encourage the completion of the action items. It is recommended that we set up regular teleconferences between the officers and the subcommittee chairs to

encourage more timely completion of action items, particularly the completion of RTARs and Work Statements. Charlene will work with ASHRAE to set one up for September 2014.

Successive planning for membership. 2014-2015 will have 15 voting members. Matt needs ideas for who should move onto committee. Discussion brought up potential candidates. Maybe a straw poll at main meeting of corresponding members as to who could attend the webinar. Need to promote TC2.3 within ASHRAE and outside. Perhaps using webinars for subcommittee meetings also.

ASHRAE wants training modules. We should have training modules to attract people. Charlene is requesting ideas for training modules. Charlene will find out ASHRAE on what to do and bring to next meeting.

Adjourn

ASHRAE MEETING Minutes – Seattle
TC 2.3 Program Subcommittee Meeting
Tuesday, 1-July-2014, 12-12:45p
Redwood A, Sheraton 2nd Fl

Attendees:

John Zhang
KJ Choi
Kem Dema
David Schaaf
Pete Freeman
Barney Burroughs
Samjeek Himhoram
Paula Levasseur

Charlene Bayer
Gemma Kerr
Brad Stanley
Matt Middlebrooks
Brian Krafthefer
Marilyn Listvan
Ashish Mathur
Stephany Mason

Chicago, Jan 24-28, 2015 www.ashrae.org/chicago

Atlanta, June 27-July 1, 2015, Orlando, Jan 23 – 27, 2016, St. Louis. June 25-29, 2016
Chicago

Track 1 Systems and Equipment, **Track 2** Fundamentals and Applications **Track 3** Industrial Facilities, **Track 4** Large Buildings: Mission Critical Facilities and Applications, **Track 5** Energy Efficiency, **Track 6** Life Safety, **Track 7** Design of Energy and Water Efficient Systems, **Track 8** Hospital Design and Codes. *Consult with Track Chair for assistance.

Atlanta

Track 1 Systems & Equipment, **2** Fundamentals and Applications, **Track 3** Research Summit, **Track 4** Refrigeration, **Track 5** Building Operation, Maintenance and Optimization/Commissioning, **Track 6** Indoor Air Quality, **Track 7** Modeling throughout the Building Life Cycle, **Track 8** High Performance Buildings, **Track 9** Moving Advanced Energy Design Guidance to the Mainstream

Dates:

Chicago Meeting – Seminar and forum by August 11,, 2014

Atlanta Meeting – Conference Paper Abstracts due September 22, 2014, Technical Papers due for Review – January 5, 2015

Seminar, forum, workshop by February 5, 2015

Total: 109 slots: Conf. Paper: 116/216, Seminar: 51/109, Forum: 1/14 for Workshops: 17/35

Speakers rating below 3.5 will receive letters indicating that if they receive two additional low rating they will be required to provide proof that they have received speaker training before they will be permitted to speak again. NY: 10 speakers had below 3.5/5.0

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Type	Title	CoSponsor	Chair	When	Due Date
TBD	The IAQ Procedure is Alive and Well: Updates related to Standard 62.1, TRG4.IAQP and LEED v4.0	2.4, 62.1, 145, TRG4.IAQP	Chris Muller Charlene Bayer	Chicago	8/11/14
Forum	Is there a need for a filter rating system for charcoal filters?		Ashish Mathur	Chicago	8/11/14
Workshop	Will Filtration be alive in 2035 Co-sponsorship with TC2.4	TC2.4	Brian Krafthefer	Chicago	8/11/14
Seminar	Kathleen or Bill Lull on 145.1 and and Brad for Chicago chaired by Kathleen. Jensen (145.1 – second half of results rp1557) could be put into a seminar. Tentative title: “Gas-Phase Air Cleaner Testing”	TC2.4, EHC	Kathleen Owen	Chicago	8/11/14
workshop	Chemical media consumption		--	Atlanta	
Seminar	Results on RP 1457 (moved to Atlanta but depends on whether study will be done)		U of W	Atlanta	
Seminar	Seminar on filter breakthrough methods and sensors		Brian Krafthefer	Orlando	
Seminar	SVOC. (KJ will try to see if it can be moved up to Atlanta)		KJ Choi	Orlando	
Seminar	Residential IAQ		Stephanie Mason	Future	8/11/14
Conference Paper	Interpreting 145.2 Results: Which Filter is Best		Brad Stanley	Future	8/11/14

Additional notes:

1. There is the possibility for a seminar in Chicago by EHC that is requesting Co Sponsorship with TC2.3.
2. C2.4 also had question on need for residential test standard (this will be a forum). Cosponsors could then be EHC and TC2.4.

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3. Kathleen or Bill Lull on 145.1 and Brad for Chicago chaired by Kathleen. Jensen (145.1 – second half of results rp1557) could be put into a seminar
4. Handed out ASHRAE CEC conference items for future meetings. ASHRAE is looking for reviewers of papers
5. Possible of relevant tracks from CEC could be 2, 5, 8. Should think of not just gas but gas as part of larger system.
6. Discussion on forums led to TC2.3 trying to have a forum in their Chicago publication time

For Atlanta – There is an IAQ track

- Chemical media consumption – workshop
- Workshop what TC2.3 can do for you? – remove from list
- Case study should be scrapped and possibly moved
- RP-1457 seminar moved to Atlanta but depends on whether study will be done

Orlando

- Seminar on filter breakthrough methods and sensors – Brian will champion
- SVOC KJ champion seminar. KJ will try to see if can be moved up to Atlanta

TG2 HVAC security

- Workshop on different perspectives of security (air, glass, and flood). How to integrate with energy management and where to go from here. TG2 (Jim York) will talk with TC2.3 to see what can be pulled together.

ASFRAE filter position paper – see what could be put together for program based on this paper.

Adjourn

**TC 2.3 - Gaseous Contaminants/Removal Equipment
Research Subcommittee Meeting Minutes**

**Sunday 5:00-7:00 pm
Sheraton Hotel, Second Floor, Grand Ballroom B,
Seattle, WA**

1. The meeting was called to order at 5:15 pm. In the absence of Kathleen Owen, Paula Levasseur acted as Chair. She welcomed the attendees.
2. Everyone introduced themselves, and a Sign-In sheet was circulated.
3. The Minutes from New York were accepted as written.
4. TC 2.3 RAC Liaison Harvey Sachs presented his report as follows:
 - A. A new RTAR form has been issued, and RAC are pleased with it. A writable .pdf version of it is posted on the ASHRAE website. Contact Donna Daniels at ASHRAE if experiencing problems with accessing or using this .pdf;
 - B. RAC is going to change the way it gives feedback to TCs about RTARs. There will be only two options: Accept with comments, and Reject with comments. Since this is supposed to help the TCs, the question was asked whether this would stop the seemingly endless cycle of new comments on a document, which sometimes has returned it to its starting point. Harvey said he hoped that the change would reduce incidence of this problem.
 - C. ASHRAE's new Strategic Plan will come into play in 2015. RAC will spend time working out how best to implement it through research. After that, we should expect changes to the type of research projects that will be accepted. Specifically, there will be more systems research versus current components research, and more multidisciplinary projects.
 - D. Harvey said that, in order to provide the most timely advice, he would like to see RTARs before the TC votes on them. That way, the TC does not have to vote twice if he suggests changes. He will be able to comment on their relevance to the new Strategic Plan. Please note that the TC does need to give him adequate time to review the RTAR and prepare his comments, so please submit RTARS to him at least a week before meetings or teleconferences.

Paula thanked Harvey for his remarks.

5. Up-Dates on Current Research Project
 - A. 1457-RP "By-product Production from Photocatalytic Oxidation Associated with Indoor Air cleaning Devices" PI - Ramsey Kropp. PMS Chair Kathleen Owen sent the PMS comments on the draft final report to Ramsey at the beginning of June. He now has an unrelated job, and it is not clear when a new (and hopefully final) draft will be submitted.

6. Work statements & RTARs
 - A. 1579-WS “Testing and Evaluation of Ozone Filters for Improving IAQ”. Bill Lull is in charge of this WS, which is stalled because it needs input from the results of EHC project RP-1491. Bill wants to hold a telecon as soon as the 1491 final report is available. Dave Chojnowski, Michael Sexsmith and Sanjeev Hingorani asked to be added to the team developing this WS;
 - B. 1720-WS “Validation of gas-phase air-cleaner performance test method (Standard 145.2) by laboratory testing of commercially available filtration devices”. Gemma Kerr, the WS champion, said that a useful meeting of the writing Working Group had been held after the SSPC 145 meeting and that she would be able to circulate a new draft soon. There were no new volunteers to join the current WG of Dave Chojnowski, Matt Middlebrooks, Charlene Bayer and Rahul Bharadwaj.
 - C. Proposal to the International Energy Agency (not an RTAR or WS) - whole building performance, clean air while saving energy – Jensen Zhang is champion. The intent is to look at air-cleaner energy efficiency. The topic will be discussed at a workshop (CHAMPS?) later this year, and an update will be provided in Chicago.

7. Proposed RTARS and other work: status updates
 - A. Field performance of typical gas-phase air cleaning technologies over service life. Brad Stanley is champion and has collected data on performance in fifty buildings. Jensen Zhang thinks there is a need for research on this topic and will work with Brad on this,.
 - B. Kitchen Hood – this is being championed by TC 5.10 with Brian Krafthefer acting as liaison with TC 2.3. The RTAR deals with the effects of UV light on gaseous and particulate hood contaminants. Jensen Zhang reported that no action was taken on this RTAR by TC 5.10 at this meeting.
 - C. Jensen mentioned that EHC have sVOCs removal on their research priorities list, but that this research is more suitable for implementation by TC 2.3. Charlene Bayer, Jensen Zhang and Stephany Mason will work to produce an RTAR. It will include how SVOC emissions change with temperature.
 - D. Remaining Life Analysis Test Method for Gas-Phase Medias - Matt Middlebrooks, Paula Levasseur, Brad Stanley, and Ashish Mathur. Ashish said there were various methods used by the industry. The team needs to identify a suitable (inexpensive) method and write an RTAR to validate the method. The champions will organize a conference call to move forward.
 - E. “Determination of the Exhaust air Contaminant Transfer Ratios (ECTR) for selected typical exhaust airborne contaminants while using commercially available air-to-air energy recovery ventilation (ERV) devices or systems in HVAC systems applications” (aka contaminant release from energy wheels). It is currently not clear whether a work statement on this topic has been completed and sent out for bid by TC 5.5. Brad Stanley agreed to contact TC 5.5 to clarify the situation.

8. New Ideas for RTARS
 - A. Demand-based air-cleaner operation to save energy. Brian Krafthefer and Jensen Zhang will work on the RTAR;

- B. Chang-Seo Lee (who will attend in Chicago) has offered to champion an RTAR for a project to measure bio-effluent emission rates to assist IAQP calculations. The data in the Handbook (HVAC Applications, Ch 46) is old and does not include the effects of perfume and cologne use. We need to ask for TC 2.1 input and get help for Chang-Seo;
 - C. Another project from the EHC priority list is determining the effects of filtration on health, which would help in updating the ASHRAE position paper. Currently there is little data for particulate filters and none on gaseous. Charlene will champion;
 - D. IAQP field studies. This has been rejected multiple times by RAC, but with changes in RAC personnel and ASHRAE strategic plan, it should be resubmitted. Charlene will find the old RTAR and champion the revival;
 - E. Using specially treated textiles to reduce odors (the effect would be similar to using room air-cleaners). This is being done (in hospitals) but there has been no performance verification to date. Arsen Melikov will champion, and Ashish will assist.
9. New Business
- A. Charlie Waddell gave a short presentation on Bipolar Ionization. This process uses needlepoint technology to produce both positive and negative ions, and much less ozone than some other ionizers. There is a need to develop a performance test method for VOC removal and improvement of IAQ, and to test a variety of commercially-available ionization devices. Charlie Waddell will champion, with help in writing the RTAR from Jensen and Dean Tompkins. Gemma will send the new RTAR template to Charlie;
 - B. An email was sent to Kathleen noting that someone had tried to publish material that came from an approved ASHRAE Project final report, and was stopped because the material had not been published in the open literature. This person wanted to know if there was any way to speed up access to such material. It was suggested that contractors be required to provide a special summary that can be quoted immediately the final report is approved, however this may not be compatible with current ASHRAE research contracts.
10. There was no Break into Working Groups, because of all the useful discussion that had already taken place.
11. Updates from Research Subcommittee Chairs Breakfast – (breakfast occurs after the research meeting, so notes will be added after meeting)
12. Dinner plans: eight people signed up to go to dinner at the Taphouse Grill at 8 pm.
13. The meeting was adjourned at 6:40 pm.

**TC 2.3 - Gaseous Contaminants/Removal Equipment
Standards Subcommittee Meeting Minutes**
Monday, June 30th 2014, 6:00-8:00 p.m.
Seattle Sheraton, Second Floor, Redwood B

The meeting was called to order at 6:10 pm by Acting Chair Matt Middlebrooks. Present were:

Name

- 1) Charlene Bayer
- 2) Keith Chesson
- 3) Kyung-Ju Choi
- 4) Dan Haas
- 5) Brian Krafthefer
- 6) Gemma Kerr
- 7) Sanjeev Hingorani
- 8) Paula Levasseur
- 9) Stephany Mason
- 10) Matt Middlebrooks
- 11) Kartik Potukuchi
- 12) Thad Ptak
- 13) Brad Stanley

1) Update on standards within scope of ASHRAE TC 2.3

- a) GPC 27P “Procedures for measurement of gases in indoor environments” - *Gemma Kerr*
- SPLS are cracking down on committees that are taking a long time to complete their documents. GPC 27 is being required to produce a public review draft by June 2015, and has put in place a schedule and writing assignments to achieve this.
- b) ASHRAE Std. 145.1-2008 “Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media” – *Gemma Kerr*
- A revision has been completed, and the standard is with ASHRAE waiting to go out for public review.
- c) ASHRAE Std. 145.2-2011 “Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices” - *Gemma Kerr*
- Answers to an interpretation request were approved in Seattle, and the necessary minor text changes will be made to the Standard
- Advances are being made in writing WS-1720 which, if approved, will generate filter performance data to validate the Standard.

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

- a) GPC35P “Method for Determining the Energy Consumption Caused by Air-Cleaning and Filtration Devices – *Brad Stanley*
- the meeting has been held, but did not have a quorum. The discussion covered background material to include in the Guideline and what it is intended to achieve. An RTAR (#1734) on urban aerosols was written and submitted to RAC through TC 2.4 between New York and Seattle. It is being voted on by RAC in Seattle.
- b) TC 2.4 “Particulate Air Contaminants and Particulate Contaminant Removal Equipment” –

Gemma Kerr and Keith Chesson

- Four addenda have been produced recently for Standard 52.2. Two are ready for publication, and the others are starting public review. No decision has yet been made on whether to move the conditioning step described in Appendix J into the body of the Standard. It should be noted that California will require all particulate filters to be labeled with the MERV obtained using Standard 52.2 as of July 1. The industry is not happy, and a group of big box retailers are creating their own particulate filter performance classification.

- c) TC 2.9 “Ultraviolet Air and Surface Treatment” – *Matt Middlebrooks*
 - i) SPC 185.1 “Method of Testing UVC Devices for use in air handling units or air ducts to inactivate airborne microorganisms”
 - ii) SPC 185.2 “Method of Testing Ultraviolet Lamps for Use in HVAC&R Units or Air Ducts on Irradiated Surfaces”
 - Both of the above standards have now been completed. The TC is proposing to add a new Standard for overhead UV disinfection units.
- d) TC 9.11 “Clean Spaces” – *Matt Middlebrooks*
 - This TC is not working on any standards at present, and there was no discussion relevant to this committee at their meeting.
- e) SSPC 62.1 “Ventilation and IAQ High Rise Buildings” – *Brad Stanley*
 - A seminar co-sponsored by SSPC 62.1, TC 2.3 and TC 2.4 was approved for Seattle, but is postponed to Chicago. It will be chaired by Charlene Bayer.
- f) SSPC 62.2 “Ventilation and IAQ Low Rise Buildings” – *Stephany Mason*
 - the SSPC is discussing the possibility of an IAQP pathway for design, with reduced outdoor air requirements and extra filtration in the air system. Home owners’ attitudes are quite different from those of commercial building owners/managers, and a ten-year implementation timeframe is envisaged.
 - They are also looking at improving source control through better placement of air handlers (i.e. not in crawlspaces or garages).

3) Information Exchange

- a) AFS – *KJ Choi*
 - This year’s AFS meeting will be held October 14-15 at the Hilton Rosemount Hotel at Chicago O’Hare airport. The theme is “Next Generation Filter Media Conference – Embracing Future Challenges”
 - Thad Ptak would like to see AFS spending more effort on air filtration and less on water filtration.
- b) ASTM D22.05 “Air Quality” SC “Indoor Air” – *Stephany Mason*
 - This committee is looking at more passive measurement methods for homes with guidelines on how to use them, also emissions.
 - They are also looking to revise method TO15. Now that people are building on brownfield sites, there is a need for methods for constant monitoring of soil gases.
- c) ASTM D28.04 “Activated carbon” SC “Gas Phase Evaluation Tests” – *Paula Levasseur*
 - i) D6646 - 03(2008) “Standard Test Method for Determination of the Accelerated Hydrogen Sulfide Breakthrough Capacity of Granular and Pelletized Activated Carbon”
 - This method is unlikely to change, and we have no regular update. Delete this item.
- d) CEN/TC 195 “Air filters for general air cleaning” WG 5 “Gas phase filters” – *Paolo Tronville*
 - i) EN ISO 10121-1 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 1: Gas Phase Air Cleaning Media (GPACM)”;
 - ii) EN ISO 10121-2 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 2: Gas Phase Air Cleaning Devices

- (GPACD)”
- These methods will always track the ISO/TC 142 methods. Delete these items.
 - e) CEN/TC 346 “Conservation of cultural property” WG 4 “Environment” – *Chris Muller*
 - No regular update. Delete this item.
 - f) CEN/TC 386 “Photocatalysis” – WG2 “Air Purification” – *Paolo Tronville*
 - No regular update. Delete this item.
 - g) ISO/TC 22/SC7/WG3 “Air and oil filters” – *Paolo Tronville*
 - i) ISO/TS 11155-2: 2009 “Road vehicles - Air filters for passenger compartments - Part 2: Test for gaseous filtration”
 - This standard seems not to be going anywhere. Delete this item.
 - h) ISO/TC 142 “Cleaning Equipment for Air and Other Gases” /WG8 “Gas-phase air cleaning devices” – *Matt Middlebrooks*
 - i) ISO 10121-2:2013 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 2: Gas Phase Air Cleaning Devices (GPACD)”
 - ii) FDIS 10121-1 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 1: Gas Phase Air Cleaning Media (GPACM)” (FDIS vote ends February 5th 2014)
 - This standard is now published (2014).
 - iii) – WG8 has two new items under consideration. One is ISO/PWI 10121-3 “Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 3: Classification system for assessing the performance of gas-phase air cleaning devices for general filtration”. This has not yet entered the standards development process.
 - iv) The second new item is ISO/PWI 10121-4 “Test method for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 4: Field equivalent test method(s) for assessing the performance of gas-phase air cleaning devices for general ventilation”. This has not yet entered the standards development process.
 - v) US Technical Advisory Group (TAG) to ISO/TC 142
 - Matt Middlebrooks is set to become Chair of the TAG. There are some governance issues and lists of experts and Advisory Panel members need to be recreated.
 - i) ISO/TC146 “Air quality” /SC6 “Indoor air” - *Stephany Mason*
 - This committee is similar to D22.05. Stephany will report in future.
 - j) ISO/TC 205 “Building environment design” – *Stephany Mason*
 - i) ISO 16814:2008 “Building environment design - Indoor air quality - Methods of expressing the quality of indoor air for human occupancy”
 - Stephany may be able to update us on this in future.
 - k) ISO/TC 206 “Fine ceramics”/WG 37 “Test methods for photocatalytic materials”
 - i) ISO 22197-x:2007 “Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for air-purification performance of semiconducting photocatalytic materials
 - (1) Part 1: Removal of nitric oxide (2007 – under revision)
 - (2) Part 2: Removal of acetaldehyde (2011)
 - (3) Part 3: Removal of toluene (2011)
 - (4) Part 4: Removal of formaldehyde (2013)
 - (5) Part 5: Removal of methyl mercaptan (2013)
 - No regular update. Delete this item.
 - ii) ISO/DIS 18560-1 “Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for air-purification performance of semiconducting photocatalytic materials by test chamber method under indoor lighting environment - Part 1: Removal of formaldehyde”
 - No regular update. Delete this item.
 - l) ISO/TC209 “Cleanrooms and associated controlled environments” – *Chris Muller*
 - i) ISO 14644-8:2013 “Classification of airborne molecular contamination” (under revision)

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- ii) ISO 14644-10:2013 “Cleanrooms and associated controlled environments - Part 10: Classification of surface chemical cleanliness”
 - This is similar to IEST, No regular update. Delete this item.
 - m) ITRI (Taiwan) – *Chris Muller*
 - No regular update. Delete this item.
 - n) USGBC – *Charlene Bayer*
 - LEED V4 will be issued in 2015. The LEED procedures are now on continuous maintenance.
- 4) Old Business**
- a) Life Cycle Cost Calculation Guideline/Standard
 - ASHRAE GPC 35 is dealing with this issue now. Delete this item.
- 5) New Business**
- With a number of ISO/TC updates recommended to be dropped from the Agenda, it was recommended that we add an Agenda item “Other ISO TCs” where any updates can be reported in future.
- 6) Adjourn**
- The meeting was adjourned at 7:02 pm.