



**Draft Minutes - ASHRAE MEETING – Orlando  
TC 2.3 - Gaseous Air Contaminants/Removal Equipment  
TC Meeting**

Tuesday (02/04/20), 1:00 pm - 3:30 pm  
Hilton Orlando, LL, Orange A

**Meeting membership attendee list is as follows:**

Last Name	Name	Member Status	Position	Present
Total Voting Members = 10 out of 16 in attendance at Voting				
Abate	Mr. Anthony Abate	VM	Member	P
Agopian	Mr. Nick Agopian	VM	Member	P
Bayer	Dr. Charlene W. Bayer, PhD	VM	Member	-
Choi	Dr. KJ Choi, PhD	VM	Program Chair	P
Haas	Mr. Daniel Haas	VM	Member	P
Hingorani	Dr. Sanjeev Hingorani, PhD	VM	Chair	P
Kerr	Dr. Gemma Kerr, PhD	VM	Member	P
Krafthefer	Mr. Brian Krafthefer	VM	Handbook Chair	P
Kwong	Mr. Kevin Kwong	VM	Secretary	P
Lee	Dr. Chang-Seo Lee, PhD	VM-NQ	Member	P
Mason	Mr. Dan Mason	VM	Member	P
Middlebrooks	Mr. Matt Middlebrooks	VM	Membership Chair	P
Roseberry	Mr. Jeffrey Roseberry	VM	Member	P
Sun	Dr. Christine Sun, PhD	VM-NQ	Member	P
Tronville	Dr. Paolo M. Tronville, PhD	VM	Standards Chair	P
Zaatari	Dr. Marwa Zaatari, PhD	VM	Vice Chair	P

**Summary of Motions**

#	Motion	Vote (For-Against-Abstain-Absent-Chair Voting Status)
1	Motion to approve TC 2.3 minutes from Kansas City 1 <sup>st</sup> – Brian Krafthefer, 2 <sup>nd</sup> – Gemma Kerr	14-0-1-1-CNV
2	Motion to co-sponsor TC 4.3 Seminar – “Data driven air quality in buildings. How close are we and what do we still need?” 1 <sup>st</sup> – KJ Choi, 2 <sup>nd</sup> – Marwa Zaatari	14-0-1-1-CNV
3	Motion to approve a no-cost extension through July 31st for ASHRAE RP-1579 “Testing and Evaluation of Ozone Removal Air Cleaning Devices for Improving IAQ” 1 <sup>st</sup> – Gemma Kerr, 2 <sup>nd</sup> – Paolo Tronville	13-0-1-2-CNV

1. Meeting was called to order by Chair @ 1:00pm
  - a. The ASHRAE Code of Ethics was reviewed.



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- 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 below link.
  - ii. <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>
- b. Members and guests were introduced.
- c. It was determined that there was a Quorum with 15 of 16 voting members present at roll call.
- i. Voting Members for this meeting: Anthony Abate, Nick Agopian, Charlene Bayer, KJ Choi, Daniel Haas, Sanjeev Hingorani, Gemma Kerr, Brian Krafthefer, Kevin Kwong, Chang-Seo Lee V-NQ, Daniel Mason, Matt Middlebrooks, Jeff Roseberry, Christine Sun V-NQ, Paolo Tronville, Marwa Zaatari
  - ii. 16 Voting Members and 2 NQM
  - iii. > ½ Voting Members Present (9) (Yes – 15/16)
    - a. Absent: Charlene Bayer
- d. Chair's Report
- i. The TC reorganization committee is preparing a report and recommendations to deliver to TAC this month.
  - ii. Goals include increasing collaboration on programs and seminars and increasing meeting efficiencies.
  - iii. Smaller TC subcommittees can have meetings in the TC Collaboration Area instead of booking rooms. Screens will be available, but you need to bring your own projectors.
  - iv. Use Basecamp for TC related activities.
  - v. Refrain from commercialization of program content, especially on social media.
  - vi. Respond to the ASHRAE research survey sent out on Jan 13<sup>th</sup>.
- e. Reporting from ASHRAE liaisons.
- i. Jon Cohen – Section Liaison
    1. ASHRAE would like to cut down on meeting spaces. The number of meeting spaces in the last 5-7 years has more than doubled. There is an unsustainable growth of meeting spaces which is very costly and limits conference destinations. This also leads to increases in conference registration fees.
    2. Streamlining is a core goal of the ASHRAE Strategic Plan.
    3. There are currently 6 subcommittee meetings for TC 2.3. This is above the average.
    4. Jon encouraged the use of the new TC Collaborative Area.
      - a. Brian: Are there limitations to the TC Collaborative area? How about PMS meetings and closed conversations?
      - b. Jon: Try to conduct these closed PMS conversations by conference call or outside of the TC Collaborative Area.
  - ii. Kevin White – ASHRAE Certification Committee
    1. The committee has an algorithm for certification programs. Algorithm criteria include: does it meet Strategic Plan, is there a competitive group, is there a job that would benefit and use this certification program.
    2. Certification programs go through a stringent process. It takes a minimum of 2 years to get a certification program started.
    3. If this TC cannot meet these criteria alone, it may be possible to collaborate with other TCs to create a combined program.



4. Kevin White has sent information to Christine Sun. Christine will send to the group.

**2. Review and Approval of previous meeting minutes from Kansas City.**

- a. Motion to approve TC 2.3 minutes from Kansas City
  - i. 1<sup>st</sup> – Brain Krafthefer
  - ii. 2<sup>nd</sup> – Gemma Kerr
  - iii. 14-0-1-1-CNV (For-Against-Abstain-Absent-Chair Voting Status)
  - iv. Absent: Charlene Bayer

**3. Summary of votes between meetings:**

- a. RTAR:1858 “Evaluation of HVAC ventilation effectiveness in reducing semi-volatile organic compounds (SVOCs) in indoor spaces” Sponsor the RTAR, Approved 14-0-1-1
- b. TRP-1838 “Emerging gas-phase electronic filtration technologies and ASHRAE 145.2 test standard” Contractor recommendation, Approved & Awarded

**4. Review of Action Items from Last Meeting**

#	Action Item	Owner	Meeting Initiated	Update from Orlando 2020	Status
1	Workshop on performance rating system summary to be sent out.	Ashish Mathur	Atlanta	Ashish wants to keep this open.	Open
2	Collection of TC member bibliography papers for website posting	Marilyn Listvan	Atlanta	Request for all members to send information to Marilyn.	Ongoing
3	Development of a course on gas phase filtration to be part of ASHRAE supported classes and send to chapters	Brian Krafthefer	Atlanta	Paula will work on this.	In-Process
4	Title/purpose /Scope for MTG or GPC on how to implement combined filtration systems	Matt Middlebrooks	Houston	Matt has a TPS. Hasn't had time to pursue further.	Open
5	PowerPoint presentation to describe T.C. 2.3	Marilyn Listvan, Kevin Kwong, Nick Agopian	Houston	Kathleen has sent presentation to Paula. Paula is the new champion for this project.	Open
6	Setup BaseCamp site for TC2.3 Research	Charlene Bayer	Las Vegas	Sanjeev set this up. Sent to TC 2.3 leadership. Expecting TC 2.3 leadership to pass on to other members as needed.	Closed (Orlando 2020)
7	Twitter account	Marwa Zaatari	Long Beach	Send TC 2.3 related tweets and updates to Marwa. Follow/Join the Twitter and LinkedIn accounts. Marilyn – There is a TC 2.3 Outreach	Ongoing



#	Action Item	Owner	Meeting Initiated	Update from Orlando 2020	Status
				page on LinkedIn. Try to post updates there. Would like to keep this going if there is interest.	

## 5. Subcommittee Reports

- a. Handbook - Subcommittee Chair -- Brian Krafthefer
  - i. At the subcommittee meeting, a liaison was nominated for the Applications volume of the handbook. However, Brian would like to remain chair for that for the time being.
  - ii. The subcommittee reviewed Chapter 11 – Fundamentals and addressed questions from the reviewers.
  - iii. Chapter 11 will be brought before the TC in June. If there are no or minor revisions, then we can send to Heather at ASHRAE.
  - iv. The final submission date is July 31st.
  - v. There will be a teleconference in the 3rd week of March. Let Brian know if you would like to join.
    1. Vivek Gaur wants to join this teleconference.
  
- b. Membership - Subcommittee Chair -- Matt Middlebrooks
  - i. 15 of 16 voting members present.
  - ii. 22 Provisional NVM.
  - iii. 112 Corresponding members.
  - iv. Approximately 17 YEA members. YEA designations are not provided for Provisional members.
  - v. 3 people rolling off after June 2020: Nick Agopian, Dan Haas, Marwa Zaatari
  - vi. Marwa will be rotated back on since she is the TC 2.3 Vice Chair.
  - vii. 4 people rotating on after June 2020.
  - viii. It is easy to become a TC 2.3 member. There is a button on ASHRAE's website to automatically add yourself to the TC roster.
  
- c. Planning - Subcommittee Chair – Marwa Zaatari
  - i. Reviewed actions from previous meeting.
  - ii. There is interest in forming a new MTG for best practices when using multiple technologies.
  - iii. Discussed how to promote TC 2.3.
  - iv. Discussed the roadmap. Brian created the original. This will be updated to an Excel format. Updates will be based on the minutes from each subcommittee.
  - v. Vice Chairs were assigned for each subcommittee.
  
- d. Professional Development Coordinator -- Barney Burroughs
  1. Barney was not in attendance
  
- e. Program - Subcommittee Chair -- KJ Choi
  - i. The subcommittee decided there will be two seminars submitted for Austin. One of the seminars is a resubmission.
  - ii. There is one seminar coming out of TC 4.3. Jordan Clark is requesting co-sponsorship from TC 2.3.



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- iii. Motion to co-sponsor TC 4.3 Seminar – “Data driven air quality in buildings. How close are we and what do we still need?”
    - 1. 1<sup>st</sup> – KJ Choi
    - 2. 2<sup>nd</sup> – Marwa Zaatari
    - 3. 14-0-1-1-CNV (For-Against-Abstain-Absent-Chair Voting Status)
    - 4. Absent: Charlene Bayer
  
  - f. Publications - Subcommittee Chair -- Marilyn Listvan
    - i. One publication: “History of Filtration and Air Cleaning – 100 years”
    - ii. Publications also unlock a presentation slot.
  
  - g. Research - Subcommittee Chair -- Kathleen Owen
    - i. See the Research Subcommittee Minutes for all project updates
    - ii. Updates from the Research Chair breakfast:
      - 1. Reminder that there was a survey about the research strategic plan. There have only been about 700 responses to the survey.
      - 2. There are 49 on-going research projects.
      - 3. 10 projects will finish by the summer meeting.
      - 4. 2 RTARs were reviewed.
      - 5. Contractors were selected for 11 projects.
      - 6. 2 URP were submitted.
      - 7. Homer Adams Award – For graduate students. There were only 2 nominations.
      - 8. Innovative Research Grants – There were 13 pre-proposals which was narrowed down to 4. This was awarded to Dr. Horton from Purdue University.
      - 9. PES/PMS training is available online.
      - 10. There was a strong recommendation to pay attention to proposal evaluation criteria when writing Work Statements.
      - 11. TC 2.3 has 3 on-going projects.
      - 12. 1579-RP has a new EHC representative, Hoy Bohanon. Sanjeev, as PMS Chair, should get this approved with Bill Hutzal.
      - 13. 4 WS/RTARs in progress.
      - 14. Kathleen will be stepping down as Research Chair and Paula will take over. Officially effective July 2020.
      - 15. An emergency roster change is probably not needed. Kathleen and Paula can work together for the next meeting.
  
  - h. Standards - Subcommittee Chair – Peter Freeman
    - 1. No Update
  
  - i. Website - Subcommittee Chair -- Paula Levasseur
    - i. Any presentations uploaded to the website cannot contain emails or commercialism.
    - ii. You need written permission from the author for ASHRAE presentations. These ASHRAE presentations need to show the meeting location and year.
    - iii. Send ASHRAE presentation to Sanjeev. Sanjeev will approve and send to Paula.
    - iv. Non-ASHRAE presentations may have to go through the TC for a vote.
  
  - j. SPC145 – Committee Chair – Tony Abate

- i. Tony is the new chair.
- ii. 145.1 was discussed. Chang-Seo raised some issues with this test method.
- iii. 145.2 discussion on electronic air cleaner inclusion.
- iv. TPS went through public review process. Some negative comments were received.
- v. 1838-RP project will have implications on 145.2.

**6. Report from TC liaisons**

- a. Nick: TRG-IAQP focuses on how we can integrate information across IAQP, 145, and TC 2.3.
- b. Peter: D6646 has a round-robin on hydrogen sulfide. Brandon Bentley (Calgon Carbon) is the contact for this round-robin.
- c. Peter: Trace Capacity Number method. Uses carbon tetrafluoride (tetrafluoromethane) as a surrogate for measuring how well an activated carbon does for low concentration physically sorbent organics. Micropore structure vs. no micropore structure.
- d. Gemma: GPC 27 (“Measurement Procedures for Gaseous Contaminants in Commercial Buildings”) has been published. TC 2.3 is the parent committee. GPC 27 is not yet available in the ASHRAE bookstore however Gemma has talked to ASHRAE Standards.
- e. Nick: Did TC 2.3 co-sponsor 1780-RP “Test method to evaluate cross-contamination of gaseous contaminant within total energy recovery wheels” from TC 9.6? Nick in on the PMS and will keep the committee updated.
  - i. Paolo checked and TC 2.3 is a co-sponsor.
- f. Sanjeev: How do we get more TC liaisons?
  - i. Gemma: This is a planning subcommittee issue. We should create a list of other relevant committees.
  - ii. The following is a list of individuals volunteering to be liaisons for various TC 2.3 related committees:
    - 1. Hank Greist – TC 2.9
    - 2. Nick Agopian – 62.2
    - 3. Nick Agopian – TRG-IAQP
    - 4. Nick Agopian - 62.1
    - 5. Jensen Zhang – EHC
    - 6. Brian Krafthefer – TC 4.10
    - 7. Tony Abate – TC 4.3
    - 8. Dara Feddersen – TC 2.4
    - 9. Dara Feddersen – U.S. TAG to ISO/TC 142

**7. New Business**

- a. Discussed having a vice chair for all subcommittees so that we can maintain continuity and cover for unforeseeable absences at meetings.
- b. The following table lists the subcommittee Vice Chair designations from the planning subcommittee meeting:

Subcommittee	Chair	Vice Chair		
Research	Paula Levasseur	Caitlin Naske		
Standard	Michael Sherber			
Handbook	Brian Krafthefer	Michael Sherber	Kerr Gemma (Fundamentals Chapter)	Victoria Binz (Application Chap.)
Planning	Marwa Zaatari	Kevin Kwong		
Programs	KJ Choi	Mick Folm		
WebMaster	Paula Levasseur			
MemberShip	Matt Middlebrooks	Kevin Kwong		

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- i. Tony Abate volunteered for Vice Chair of the Standards subcommittee.
  - c. There is a request for a six-month no-cost extension of ASHRAE 1579-RP Project "Testing and Evaluation of Ozone Removal Air Cleaning Devices for Improving IAQ".
  - d. Motion to approve a no-cost extension through July 31st for ASHRAE RP-1579 "Testing and Evaluation of Ozone Removal Air Cleaning Devices for Improving IAQ"
    - i. 1st – Gemma Kerr
    - ii. 2nd – Paolo Tronville
    - iii. 13-0-1-2-CNV (For-Against-Abstain-Absent-Chair Voting Status)
    - iv. Absent: Marwa Zaatari and Charlene Bayer.
    - v. Sanjeev will inform Mike Vaughn, Donna Daniels, and Bill Hutzal of this approval vote.
  - e. Rahul: World Filtration Congress will be April 20-24 in San Diego. 6 Plenary speakers. 30 keynote presentations. More than 300 presentations. 7 different tracks. Student posters with awards.
  - f. Christine: Waterloo Filtration Institute will be holding their 2020 Annual Conference from July 29-31 in Waterloo, ON, Canada. They are working on a filter products certification process. Auditing process for labs. Both air and liquid filtration.
    - i. Put the Waterloo Filtration Institute as an agenda update item for future TC 2.3 Main meetings.
  - g. Gemma: Congratulated Paolo Tronville on becoming an ASHRAE Fellow.
  - h. Paolo: RoomVent 2020 will be June 14-17 in Torino, Italy. "Energy efficient ventilation for healthy future buildings".

#### **8. Agenda suggestions for the Summer Meeting in Austin, Texas**

- a. Tony: Many programs (LEED, Fitwel, others) are incorporating continuous read sensors. Some are TVOC measurements and some are fixed gas measurements. Should we be looking at these devices closer?
  - i. Brian is working on an RTAR on this topic.
- b. Nick: 62.2 is starting work on incorporating IAQP into the residential standard. This may not follow exactly what 62.1 is doing. This might have a requirement for some sort of future 145 standard.
- c. Matt proposed reduced the TC 2.3 Main meeting to 2-hours instead of 2.5 hours.
  - i. Marilyn suggested keeping 2.5 hours and to use the extra time to present any rejected ASHRAE presentations.
  - ii. Nick remarked that it would be difficult to get time back once we reduce the meeting timeslot.
- d. Jensen: IAQ Guide for Residential Buildings is now published. There is a filtration chapter. Larry suggested making this available for free to ASHRAE members. This is based on an ASHRAE funded report which is already available.
  - i. Gemma commented that the proposal for free PDF downloads of all standards was rejected by the ASHRAE Standards committee.
  - ii. Mike remarked that the cost impact to ASHRAE was not huge. There are on-going negotiations for free standards.

#### **9. The meeting was adjourned @ 2:35pm**