



Meeting Minutes - ASHRAE MEETING – Winter 2022
TC 2.3 - Gaseous Air Contaminants/Removal Equipment
TC Meeting

Tuesday (02/1/22), 1:00 pm – 3:30 pm PT

Caesars Palace, Roman I (P)

Link for virtual attendees: <https://events.rdmobile.com/Sessions/Details/1260248>

1. Call to order:

Meeting called to order at 1:16 PM PT, technical difficulties

2. ASHRAE Code of Ethics

Chair reviewed the ASHRAE Code of Ethics and reminded the in-person attendees of ASHRAE's COVID-19 health guidelines.

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.

<https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>

As members of ASHRAE or participants in ASHRAE activities we pledge to act with honesty, fairness, courtesy, competence, integrity, and respect for others in our conduct. We will avoid conflicts of interest, and behavior that is discriminatory and/or harassing.

3. Ask virtual members and guests to use the chat feature to enter their Name, Affiliation, Email Address, and YEA designation (if applicable) for meeting attendance records.

i. 12/14 Voting Members present. Quorum established.

a. Bob Burkhead and Jensen Zhang absent

ii. KJ Choi, Brian Krafthefer, and Paula Levasseur all attended Chair breakfast meeting.

Meeting membership attendee list is as follows:

Last Name	First Name	Member Status	Position	Virtual or in-person
12 out of 14 Voting Members in attendance				
Zaatari	Marwa	Voting	Chair	in-person
Kwong	Kevin	Non-voting	Vice Chair/Planning Chair	virtual
Binz	Victoria	Non-voting	Secretary	in-person
Choi	KJ	Voting	Program Chair	virtual
Krafthefer	Brian	Non-voting	Handbook Chair	virtual
Middlebrooks	Matt	Voting	Membership Chair	virtual
Sherber	Michael	Non-voting	Standards Chair	virtual
Levasseur	Paula	Non-voting	Research Chair	in-person
Abate	Tony	Voting		in-person
Burkhead	Robert	Voting		-
Corbat	Michael	Voting		in-person
Flom	Michael	Voting		virtual

Kerr	Gemma	Voting		virtual
Mathur	Ashish	Voting		virtual
Roseberry	Jeffrey	Voting		virtual
Schaaf	David	Voting		virtual
Zhang	Jensen	Voting		-
Guar	Vivekanand	Non-quorum		virtual
Sun	Christine	Non-quorum		virtual

4. Chair's Report

- a. Thanked the TC2.3 Leadership team, all Vice Chairs, Members & Participants.
- b. Update from TC breakfast training
- 1. ASHRAE is encouraging TCs to hold interim meetings. New announcement procedure.
 - 2. TC interim meetings should be posted (by emailing the alias TCmeetings@ashrae.net) two weeks before an online meeting and four weeks before a face-to-face meeting. The person responsible for emailing should include the meeting call-in info/ link for posting.
- 3. ASHRAE Journal Newsletter (bimonthly) will remind our members to check the listing and to provide a link to the list
 - c. Basecamp:
 - i. <https://www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations>
 - ii. TC2.3 had (2) Basecamps set up, (1) will be deleted. Leadership will make an effort to keep Basecamp updated and upload all documents.
 - iii. Anyone who needs to be added to Basecamp please put a note in the chat
 - d. Gemma Kerr is the winner of the 2020-21 George B Hightower Technical Achievement award.

This is the first Section 2 award recipient since inception of the award in 2003.

We plan to arrange a presentation/celebration event at the end of 2.3 or between 2.3 and 2.4

Gemma recommends that award winners should be announced at the Plenary; Jon Cohen will report the recommendation to TAC at the meeting tomorrow.

- e. AWARDS (Due date – September 1)
 - 1. ASHRAE GEORGE B. HIGHTOWER TECHNICAL ACHIEVEMENT AWARD
 - 2. SERVICE TO ASHRAE RESEARCH AWARD
 - 3. The Chair encouraged all members to nominate. TC 2.3 should collaborate with other TC groups.

5. Reporting from ASHRAE liaisons.

6. Review and Approval of previous meeting minutes

- a. DRAFT Summer 2021 Meeting Minutes were shared on screen for members to review.
- b. Past Meeting Minutes can be found on TC2.3 website.
 - 1. TC 2.3 website link: <https://tc0203.ashraetcs.org/>

7. Items to be Voted on:

- i. WS 1928 "Improving test methods to measure air cleaner performance against airborne pathogens."
 - a. Matt Middlebrooks (WS-Lead Author) commented that WS 1928 was accepted with comments August 2021. WS was revised and sent to TC 2.3 Voting Members January 2022.

- b. Sponsored by TC 2.9 and potential co-sponsorship from TC 2.3, TC 2.4, TC 9.6, TC 9.7, EHC and TG2.RAST
 - Nick Agopian Question: Would SSPC 62.1 or 62.2 be interested in co-sponsoring? Matt has not approached either group, Nick will speak with 62.2 to gauge interest.
 - Randy commented AHAM is looking into a similar topic and said AHAM could team up with Matt's group for research
 - c. Working group is proposing that the Principal Investigator research multiple reactive air cleaning technologies for the test method (PCO, ionizers, ect.)
 - d. Nick Agopian Question: Pathogen versus microbial.
 - Discussion about what language should be used for the work statement and what other TCs and SSPCs use.
 - e. Ashish Mathur Question: Why co-sponsorship from TC2.3?
 - Chang-Seo stated that the WS is asking to measure byproducts making it relevant to TC 2.3
- ii. Report 1579: "Testing and Evaluation of Ozone Removal Air Cleaning Devices for Improving IAQ". Vote to accept the PMS recommendation that the final report is acceptable, and project is complete
- a. Sanjeev, PMS Chair, makes recommendation

#	Motion	Vote (For-Against-Abstain-Absent-Chair Voting Status)
1	Christine Sun motioned to accept the RP-1579 PMS recommendation that the final report is acceptable, and the project is complete. Ashish Mathur seconded motion. Bob Burkhead and Jensen Zhang absent.	(11-0-0-2-1)
2	Matt Middlebrooks makes motion to co-sponsor WS 1928. Christine Sun seconded motion. Bob Burkhead and Jensen Zhang absent.	(11-0-0-2-1)
3	Gemma Kerr motioned to recommend revising Guideline 27. Tony Abate seconded motion. Bob Burkhead and Jensen Zhang absent.	(11-0-0-2-1)

8. Subcommittee Reports

- i. Research - Subcommittee Chair – Paula Levasseur
 - a. Held virtual meeting on January 19th in same time slot as (2) RPs
 - b. PMS meetings are open to the public but the data presented must not be shared or discussed outside of the meeting until it has been approved by ASHRAE.
 - c. Basecamp for research chairs, TC 2.3 Liaison and Mike Vaughn should/will be invited to join.
 - d. New 6 initiatives from ASHRAE that RTARs should be focused on. Link is in the minutes.

<https://www.ashrae.org/file%20library/technical%20resources/research/research%20strategic%20plan/research-strategic-plan.pdf>



- e. New RTAR 1935 (Chang-Seo lead) "Effects of increased use of surface disinfectants and hand sanitizers on indoor air quality" was submitted in July and recently was conditionally approved
- f. Paula will be contacting UT-Austin on research ideas from RP-1579 project
- g. There will be no new ASHRAE funding for new projects this year

ii. Handbook - Subcommittee Chair -- Brian Krafthefer

- a. Chapter 11 due 2024

Michael Sherber will be the be Chair

Next meeting will be in June

- b. Chapter 47 due 2022; due latest by July

Zoom meetings will be setup, look out for a Doodle poll

I. Week of February 27th

II. Week of March 27th

Table updates and total chapter reviewers assigned and due March 20th

Chapter will be sent to TC members on March 27th

III. Any comments received will be addressed for the 2027 version of the chapter

- c. New in-room air cleaner chapter including TC 2.3, TC 2.4, and TC 2.9

Brian to send an update on new Chapter to Marwa

Caitlin will add this new Chapter to TC 2.3 website

Will go in HVAC Applications volume

iii. Membership - Subcommittee Chair -- Matt Middlebrooks

- a. 14 Voting Members, 123 Corresponding Members, 21 Provisional Corresponding Members
- b. 4 Voting Members rolling off at the end of June (Tony, Gemma, Jeff, and Christine), 5 new members nominated to potentially roll on; verbally asked if they accept during meeting

Scott Parris – Yes

Chrystal Jolliffe – Yes

Victoria Binz – Yes

Kathleen Owen – Yes

Hank Greist – Yes

- c. Membership is currently healthy and has a relatively okay balance but is a bit heavy on manufacturers

- d. Matt will complete Roster Update Form following the meeting, all changes will be effective July 1st 2022.

iv. Planning - Subcommittee Chair – Kevin Kwong

- a. TC2.3 road maps update

In general, this format seems easy to keep updated

- b. TC2.3 journal article interest

ASHRAE is always looking for contributors, reach out if anyone is interested

EHC is looking for someone to help write IAQ column

v. Program - Subcommittee Chair -- KJ Choi

- a. January 20th meeting, 26 attendees in total

- b. "Emerging Gas-Phase Technologies-What You Need to Know" resubmitted for Toronto, all other program topics are for beyond Toronto meeting



	Session	Title	Co-sponsor	Champion	Location	Was held/Due
1	Seminar	Emerging Gas-phase Technologies -- What You Need to Know		KJ	Toronto	Resubmit
2	Workshop /Forum	Testing Reactive Air Cleaners		Owen	Toronto or beyond	
3	Seminar	Don't Gamble with IAQ: Guidance on Estimating and Monitoring the Performance of Gas-Phase Air Filters		Chris Muller	Atlanta or beyond	
4	Seminar	Exploring Gas to Particle Transition/ Brandon Boor and Stevens	TC 2.4	Brian	Atlanta or	
5	Seminar	How to Choose a Gas-phase Filter	TRG4, 62.1, SSPC 145	Ashish Mathur	Atlanta or beyond	
6	Workshop	Review and Evaluation of Standard 145.2 Test Data		Owen	Tampa or beyond	
7	Workshop	Occupant related indoor air pollution (Chang Seo)	TC2.4	Charlene	Atlanta or beyond	
8	SSPC62.1 Workshop	Misapplication of IAQ Procedure (Hoy, Marwa and Charlene, Chris Muller)	TC 2.3, EHC,	Marwa	Atlanta or beyond	
9	Workshop/forum	Particle Loading of Gas Phase Filters- Is it a Problem? (Matt, Paula, Vijay, Brian)	TC2.4, TC5.10	Brian	Atlanta or beyond	
10	Workshop/forum	Breathing in your home		Nick	Atlanta or beyond	

vi. ASHRAE Learning Institute – Marilyn Listvan

- a. Looking for people to develop courses, most likely
- b. Marilyn will get updates on the ALI

vii. Publications - Subcommittee Chair -- Marilyn Listvan

- a. TC 2.3 is looking to write an article for ASHRAE Journal

Kathleen and Gemma recently wrote one on 52.2

- b. Marilyn encouraged TC 2.3 members to send/submit any useful references to be posted to TC 2.3 website

- c. ASHRAE new “PTAR” (publication topic acceptance request), discussed at Research Breakfast

viii. Standards - Subcommittee Chair – Michael Sherber

- a. Guideline 27 needs to be revised by 2023

Request for reaffirmation of Guideline 27

- i. Michael recommended that TC 2.3 vote to revise Guideline 27. Motion made, see table above

ix. Website - Subcommittee Chair -- Caitlin Naske

- a. Draft Subcommittee meeting minutes and agendas have been updated on the website
- b. Other sections of the of the website (ex. Functions) are outdated

Caitlin will work on updating necessary sections

x. SSPC145 – Committee Chair – Tony Abate

- a. Meeting was held virtually last Sunday, 20 people in attendance
- b. Needed revision to 145.1 to keep as a continuous maintenance document

Gemma produced a revised/updated terminology document

- l. Changes need to be approved by SSPC 145
- c. Updates to 145.2 (worked on by a sub group) will go to the committee for review and comments
- d. Discussion about 145.2 potential updates (or “145.3”)

Small working group formed to tackle combination chamber and duct test method

9. Review of Action Items from Last Meeting

#	Action Item	Owner	Meeting Initiated	Update	Status
1	Workshop on performance rating system summary to be sent out.	Ashish Mathur	Atlanta	No update.	
2	Collection of TC member bibliography papers for website posting	Marilyn Listvan	Atlanta	Send in articles, ongoing.	
3	Development of a course on gas phase filtration to be part of ASHRAE supported classes and send to chapters	Paula Levasseur	Atlanta	Has some presentations available but needs help to review, Marwa and Marilyn and Jeff R. volunteered to help	
4	Title/purpose /Scope for MTG or GPC on how to implement combined filtration systems	Brian Krafthefer	Houston	Brian contacted some people as well as asked Mike Vaughn some questions but has not gotten responses. No progress since. Michael S. and John R. volunteered to help.	
6	ASHRAE Certification Program	Christine Sun	Orlando	No update. No information has been provided. Several certification programs have been launched but have a focus on people not products. Christine stated that she believes a certification program for air filtration (gas-phase and particulates) can be established.	

10. Report from TC liaisons

i. Hand Greist– TC 2.9

- a. Ashish provided the TC 2.9 updates
- b. A few projects are currently waiting for funding

Project related to ozone from 62.1, definition needs to be updated

ii. Nick Agopian – 62.2

- a. Marwa provided the SSPC 62.2 updates
- b. New addendum- Prohibiting devices that produce ozone
- c. New Indoor Air Quality Procedure work being performed by a small group

New way to calculate ventilation rates

- d. Proposing to move from MERV 6 to MERV 11

iii. Kathleen Owen - TG2.RAST

- a. Had their first meeting underwent introductions and formed a working group to see what methods are currently out there
- iv. Nick Agopian – TC 5.5
 - a. No update.
- v. Nick Agopian – TRG-IAQP
 - a. Discussed having group review and provide recommendation to update 62.1 addenda ay and az (efficiency and byproducts)
 - b. Discussion on the inclusion or infectious aerosols; feel of the group was to leave out
 - c. Should the TRG transition into a TC
- vi. Marwa Zaatari - 62.1
 - a. Update on IAQ Guideline 42P

Went out for second public review

Encouraged TC 2.3 members to review

- I. John Randtke (impact on users and customers) and Chris interested in reviewing the document
 - vii. Jensen Zhang – EHC
 - a. Update on filtration and air cleaning position document
- John R. has interest in seeing the document
- b. The CO2 document should be out soon
 - c. MTG report on Health and Wellness was approved. Recommendations on how ASHRAE can improve

viii. Brian Krafthefer – TC 4.10

- a. No updates, meeting is at same time as TC 2.3 meeting

ix. Tony Abate – TC 4.3

- a. RP-1819
 - b. RP-1823
 - c. RP-1835
 - d. CO2/DCV in multiple zone systems

x. Dara Feddersen – TC 2.4 – need to find a new liaison

- a. Gemma provided an update for TC 2.4
 - b. 1 research project was just completed and 2 research projects are still active
 - c. Work on an informative appendix to 52.2 to allow for testing devices that remove microbial contaminants.

xi. Kevin Kwong – U.S. TAG to ISO/TC 142, AHAM (*AC-4, gaseous CADR chamber test*) and IEC (*CADR-like chamber test for gaseous pollutants*)

a. Working Group 8: Gas Phase Air Cleaning Devices and Media

- 1. ISO 10121-3 “Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 3: Classification system for treatment of makeup air”

- i. Some laboratory testing still needs to be completed. The group is working on finalizing ISO 10121-3 for the FDIS ballot.

b. Working Group 11: Portable room air cleaners for comfort applications (Joint between ISO/TC 142 and IEC/TC 59)

- 1. IEC/TC 59 was restructured to a subcommittee (SC59N) of TC 59 on November 3, 2021. SC59N approved unanimously the creation of 5 Working Groups and 1 Maintenance Team as follows:
 - i. WG 1 - Reduction of particles

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- I. To develop performance test method standards for reduction of particles by household and similar electrical air cleaning appliances
 - ii. WG 2 - Reduction of chemical gases and ozone
 - I. To develop performance test method standards for reduction of chemical gases by household and similar electrical air cleaning appliances
 - iii. WG 3 - Reduction of microorganisms
 - I. To develop performance test method standards for reduction of microorganisms by household and similar electrical air cleaning appliances
 - iv. WG 4 - General characteristics
 - I. To develop guidelines for and management of Round Robin Testing, noise measurement (with TC 59/WG 2), consumer information on sensor communications, measurement of air cleaning appliances in automatic mode, and measurement of electrical power/energy
 - v. WG 5 - Special types of air cleaners
 - I. To develop performance test method standards for special use air cleaning appliances, including fresh-air, air cleaning appliances, passenger vehicle portable air cleaning appliances and robotic/mobile air cleaning appliances
 - vi. MT 6 - Maintenance of IEC 63086-1
 - vii. To maintain IEC 63086-1, Household and similar electrical air cleaning appliances - Methods for measuring the performance - Part 1: General requirements
 - xii. Paula Levasseur – TC 9.1
 - a. Not much activity, will reach out
 - xiii. Brian Krafthefer – TC 2.1
 - a. Work on RP 1760: Western Clothing Ensemble Measurements is done, Paper coming out
 - b. Work on RP-1837: Ventilation in Sleeping Environments Plan to have all work completed by ASHRAE Las Vegas meeting. Original deadline for September 2022 and presenting findings at the January 2023 meeting.
 - c. Developing WS1907 – Development of the first global IAQ database
 - d. Working on an RTAR - determination of the CO2 generation rate of occupants for selected indoor activities
 - xiv. Marilyn- 9.7
 - a. 3D printers, some interest as a research topic, said they would like to be a co-sponsor

11. New Business

12. The meeting was adjourned @ 3:18 pm