

Agenda

TC 2.3 - Gaseous Contaminants/Removal Equipment Research Subcommittee Meeting Monday, June 29, 2026 4:30-5:30 CT Austin, TX

1 Call to order

ASHRAE Value Statement:

In ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and shall avoid all real or perceived conflicts of interest. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We celebrate diverse and inclusive communities, understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all.

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Reminder: Recording (Audio, Video, Screenshots) of ASHRAE meetings, including online meetings, is strictly prohibited.

2 Introductions and sign-in sheets

3 Review of Winter Meeting Minutes- any corrections?

4 RAC Report (Section 2 Research Liaison)

5 Chair Comments

- a. Virtual Meeting- should we have a virtual meeting in between the in-person meetings?
- b. Research Chair Breakfast

6 Active Projects:

- a. **RP-1869:** Evaluation of Indoor Air Contaminants with respect to Development of a Revised Indoor Air Quality Procedure (IAQP) Design Compound and Design Target Lists for Standard 62.1. (Co-sponsored: 62.1 & TRG4). PMS Chair: Gemma Kerr.
315 VOCs reported, 42 countries, over 10,000 data points. Intended to be used to update the IAQP list of compounds. **Completed- Will have a presentation from PI during meeting 15 min**
- b. **RP-1928:** Combination duct and chamber test. Chrystal Jolliffe champion, Gemma, Cheng-Seo, and Joe Pessa. (TC 2.9 lead, Co-sponsored: 2.4 and 2.3). Awarded to LMS, PI Kevin and Kathleen.
What can be done to improve Chamber+ duct test standards 185.5 and 145.4. Phase1: KCl used for testing for mixing- different configurations. Phase 2: testing products (MERV 8, MERV 13, ionizers, ionizer+ MERV 8). Phase 3: Continuous injection, intermittent injection and added on a chamber

mixing test with 1000 ft³ to compare to 4000 ft³ chamber. **Working on Final Report- Will have a summary presentation in future.**

- c. **RP-1913** Study of the Corrosion Impact on Information Technology Equipment in Data Centers Located in Coastal Regions with High Sea Salt Concentration (TC 9.9 lead, Co-sponsored: TC 2.3). Chris Muller PES chair. PI from Syracuse University. Looking at SO₂, airborne salinity and humidity and combined effects of gas, salt pollution and moisture in the air on IT equipment. Lit Review is complete. Starting to build the test facility. PI is looking for in-kind contributions. Mississippi power, Pure Air Filtration and Camfil USA included. **Chris to give update at meeting**
- d. **1895-TRP (RP now?)** Effect of particles on loading on gas filters, with possible interest in looking at other combinations of technologies in the same air cleaner. (Co-sponsors: TC 2.4 and GPC 35) Got 5 proposals, had to get bid extensions until May. **New PES Chris M. (Chair), Paula, Brian K. Met in March, voted when out to TC and submitted to RAC by March 15th.**

7 Work Statements (WS) and RTARs

- a. **1858-WS:** sVOCs including how SVOC emissions change with temperature - Sanjeev*, Jianshun Zhang, Kevin Kwong, Kathleen Owen (TC 2.3 lead, cosponsors TC 2.4, TC 4.3) May 2025- Returned with comments. **Update- Reviewed by temporary RAC Liaison and group responded to comments- sent back to RAC liaison 6/24/26**
- b. **1976-WS** Ozone Removal Efficiency and Generation of Byproducts on VOC-Loaded Gas-Phase Air Cleaning Devices. Menjia Tang (Champion) Menjia has completed WS, PES and PMS members: Menjia, Sanjeev, Masih, Caitlin. (Caitlin Chair of PES/ PMS, Masih 2.4 representation) **Returned with comments- targeting August 15th deadline**
- c. **2008-WS** Evaluating the Influence of Challenge Gas Composition, Mixture Composition and Concentration on Gas-Phase Clean Air Delivery Rate Measurements in Chamber Testing of Various Air Cleaner Technologies (name updated) Caitlin Naske (Champion). Kathleen Owen, Oliver Dsa, Michael Link, Jesse Ondersma, Gemma Kerr. PES: Caitlin, Kathleen, Gemma, Michael. TC 2.3 lead (Co-sponsors: SSPC 145, TG2-RAST, SPC 234). Was written to support need coming out of 145.4 after PPR comments **Returned with comments- Group updated and resubmitted for May 15th deadline.**
- d. **1995- RTAR (previously 1846):** Real Time Small sensors/ affordable: Christopher Vizcaino (champion), Brian K., Fuoad Parvin, Thad Ptak, Jeff Roseberry, Sanjeev H., Jensen Zhang, Jordan Clark, Tony Abate, Marilyn L. (TC 2.3 lead, co-sponsors TG2 RAST, TG IAQ MD) Returned with comments will see if TGIAQMD members want to help **Update? (still interest)**
- e. **WS-1996** "Test Method to evaluate Cross Contamination in Energy Recovery Wheels in Critical Spaces – Part 2" (TC 9.10, co-sponsors TC 2.3, TC 5.5, TC 9.6, SSPC-62.1). Recently asked for a vote for co-sponsorship.

8 Proposed RTARS and other work:

- a. The Effects of Filtration and Air Cleaning on Health & Safety. Henry G. (Champion). Nick Agopian, Lexuan Zhong, Kathleen, Sanjeev, Paula, Brent S. add Masih, Meng Kong (recruit from TC 2.2). Henry -Using AI to compile 15 year database for air cleaning and health effects. Once compiled, will share with group and see where holes are. **Update?**

- b. **(PAUSE)**Acceptable VOC types and concentrations for inclusion in multi contaminant test gases
 Gemma champion, Kathleen, Ashish, Paula, Caitlin, and Jensen
 - i. Gas mixture vs individual gas results, how to interpret data with competition
 - ii. Gemma did background work- how can we get something that is useful for SSPC 145
 - iii. Results of RP-1869 will tell us what VOCs to look at- what are in buildings
 - iv. **2008-WS supporting 145.4 is a starting point for gas mixtures. Will pause until results.**

- c. Adsorption and emission from particulates in filters, Brian had done a lit search long ago with only a few, maybe newer studies/ research. **Caitlin (Champion) Masih will help, Brian, Marilyn, Shichao Liu**
Joined forces with TC 2.4 to address this for wildfires and other events. Had a few meetings but Caitlin paused while working on WS-2008. Update- Emailed group to revive topic

- d. “Impact of Age on Air Cleaning Devices” Cleaning secondary products from the air- 2.4 lead John Randtke*, Marwa, Jianshun, Brian K, and Jeff Roseberry interested in helping. **Looking for 2.3 co-sponsorship.**
Sent out a draft to TC 2.4- talk to John if interested, plan to use 234 (previously 185.5) for test method. John to get 2nd draft of RTAR ready for submission. Status?

- e. PFAS is it a particle or a gas, is carbon effective in removing it in air, the technology is already used in water, used in a lot of pan and cookware emerging contaminant
 Brian will champion- lit search Chris V. and Paula can help **There is now a Basecamp folder to compile related papers- send all PFAS references to Caitlin to put in folder (Topic is on Programs for a debate If this is in programs- remove from here?)**

- f. Ideas for Pheonix and Las Vegas
 - i. 9.13 Space- looking at gases in spaceships and on the moon and mars/ space. The group is working on a RTAR contaminants- Brian and Marilyn helping (may be asking for co-sponsorship) **Arup (Urup) Research Chair of 9.13- get contact from Marilyn**
 9.13 new RTAR around particles and regenerative filtrations for SPACE (no outside air)
 - ii. **(PAUSE for WS-2008)** Additional testing for 145.4, By-product testing?
 - iii. Jim D. long-term data for characterizing VOCs in buildings and emitting formaldehyde/ other VOCs- how long does it last, what is the length of time, concentration, etc. (from new building materials?) New building and monitor it over time
 - iv. Part 2 of RP- lit review of inorganic compounds (other than VOCs)
 - v. Wildfires (PTAR?) (TC 5.6 Control of Fire and Smoke)
 1. Urban areas- plastics. Source impacts the contaminants (TC 2.4 idea)
 2. Post fire/ smoldering
 3. Aging of smoke over distances
 4. Looking at not just VOCs but inorganics
 - vi. 3D printing- plastic, metal- systems are enclosed. (mitigation is done with exhaust, is carbon used?) Brent Stevens group did some research on the emissions. Does this tie into PFAS exposure? Education of what is included in the emissions (for those who have them in homes, etc.) Committee that deals with exhaust? 5.4 Industrial Processing Air Cleaning (Air Pollution Control)”
 Could this be a program? Residential/ schools? Teens impact on your IAQ- vaping, 3D printing, body spray, body odor, lack of doing laundry
 - vii. **(PAUSE for RP-1869 conclusions)** Literature review of generation rates/ emissions in spaces- to be used in 62.1 for generation rates (idea from TRG4-IAQP meeting). Will need to wait to see what the VOC list in IAQP is-most likely will be changing in the near future. Might reduce to formaldehyde and benzene?

viii. Bioeffluents – there aren't any in the IAQP list

g. New Ideas

i. Airborne microplastics and nanoplastics (Caitlin)

9 Adjourn: