

**Draft Minutes**  
**TC 2.3 - Gaseous Contaminants/Removal Equipment**  
**Research Subcommittee Meeting**  
**Houston Sunday 5:00-7:00 pm**

1. Meeting call to order by Kathleen Owen @ 5:06pm
2. Introductions and Sign-In – 5 min
3. Review of Minutes from Chicago – 5 min
  - A. Minutes available at <https://tc0203.ashraetcs.org/documents.php> Minutes approved as written
4. RAC Report (Liaison TC 2.3 – Pawel W) main Committee will vote on 2 projects 1720 and 1579. Get RTARS and Work Statements to Pawel before RAC so he can comment. Send Pawel and email if you want more information on other ASHRAE research funds. Unsolicited Research proposal can bypass the TC funding comes mainly from other sources. PMS webinar is a good tool if you are going to be on a PMS or chair a PMS.
5. Active Projects – none
6. Work statements, RTARs, and RPs – Updates – 20 min
  - A. **1720-TRP Validation of gas-phase air-cleaner performance test method (Standard 145.2) by laboratory testing of commercially available filtration devices** – Kartik Potukuchi PES: Paula Levasseur, Chris Muller, Gemma Kerr. Ready to Vote at 2.3
  - B. **1579-TRP Testing and Evaluation of Ozone Filters for Improving IAQ**— Sanjeev Hingorani, Kevin Kwong, Matt Middlebrooks, Nick Agopian, and Thad Ptak are on the PES. Ready to Vote @ 2.3
  - C. **1755-RP, Impact of Gaseous Contamination and High Humidity on the Reliable Operation of Information Technology Equipment in Data Centers**”. TC9.9 on-going project, TC 2.3 co-sponsor, Chris Muller on PES. PMS meeting Monday 7:30 am. Project going well pending analysis of results. Jensen (the PI) reported that they have requested a 6-month extension from ASHRAE for better analyzers.
  - D. **1780-WS, Test Method to Evaluate Cross-contamination of Gaseous Contaminant within Total Energy Recovery Devices**; Responsible Committee: TC 9.10 (Laboratory Systems); Co-Sponsors: TC 2.3. Chris Muller, Nick and Gemma. Latest Version was accepted by RAC will go out to bid in September. Kathleen to see if we can get a 2.3 representative on the PES. Potentially either Nick or Gemma.
  - E. **1838-WS Testing of Electronic Air Cleaners** – w/145 & 62.1 – Kevin Kwong, Chang-Seo Lee, Jeff Roseberry, Kartik Potukuchi, Tony Abate, and Tandeep Chadha Shooting for the August 15 deadline. Nick has been put on the committee as 2.3 rep to help with work statement.
  - F. **Xxx-RTAR** –Outdoor ozone in naturally vented buildings. cosponsored from 62.1, Charlene on PMS. 62.1 will take their vote on this RTAR in Chicago. 4.3 may take over the project as 62.1 is only a cosponsor. 2.3 will remain a cosponsor.
  - G. **1846-RTAR** Real Time Small sensors: Brian K., Marilyn Listvan, Fuoad Parvin, Lu Lui, Thad Ptak, Jeff Roseberry, Dave Space, Sanjeev H., Jensen Zhang.
    - I. Submitted, rejected, Brian decided to drop it. After particulate sensor project is finished we may decide to write a new one. Let’s consider keeping it open. Drop Dave, Marilyn, and Lu from the RTAR. Evaluate the information from sensors in China. Thad Ptak will help provide data. Pawel agrees we should evaluate data from China. Brian to schedule a telecom in 1

month after Thad forwards information within 2 weeks. Brian will send out the RTAR again to see where things stand.

- H. Xxx-RTAR sVOCs including how SVOC emissions change with temperature - Sanjeev\*, Jianshun Zhang, Kevin Kwong, Ying Xu
  - I. 62.2 will vote on this one in Houston – awaiting to hear results.
  - II. 2.3 will vote in main meeting TC 2.3

7. Proposed RTARS and other work: status updates 60 min

- A. Consumer Product used by Occupants, Related Pollution Loads - Chang-Seo Lee\*, Thad Ptak, Marilyn Listvan, Dean Tompkins
  - I. Looking for TRG4 co-sponsorship - some interest. Dean will help write and several others. Shooting for the August 15<sup>th</sup> deadline for submittal. Need co-sponsorship and needs more clarity before TRG4 will co-sponsor.
  - II. Dean has people from TRG4 who want to help. He will both contact them with the document and send Kathleen the names
- B. Bipolar Ionization/Reactive Air Cleaner performance test method for VOC etc. removal and testing a variety of commercially-available ionization devices. Tony Abate champion, Scott Sherwood, Jensen, Dean Tompkins, Charlie Waddell, Chang-Seo, Marilyn Listvan, Ashish. No one is responding to Kathleen's email and ISO working group 11 is already working on it so perhaps we should not reinvent the wheel. Nothing concrete until September and October as they are working with IEC. Hold until we hear results of ISO/IEC.
- C. The effects of filtration on health. Dean Tompkins, Nick Agopian, Lexuan Zhong with EHC interest.
  - I. Dean is writing a draft for a lit search. There is new MTG forming that is dealing with wellness and health. It will not be ready for August 15<sup>th</sup>.
- D. Multi-contaminant challenge what acceptable VOC levels-on hold
  - I. Ashish, Jensen, and Gemma wanted this idea left on the list
  - II. Ask at the summer Houston meeting for a champion
    - 1. Jensen too busy Ashish to champion, Kathleen, Gemma, and Paula.
    - 2. We need a better name for this item
- E. The role of gas filtration improving IAQ in Residences – Jensen, Nick, Lexuan Zhong and Kathleen.
  - I. Jensen will review the modeling framework coming out of IEA-EBC Annex 68 and report at the Houston meeting. Nick reported that Annex 68 has another 6 months. This is only looking at emission it is not studying filtration. Nick reported that in 62.2 there is an increase in awareness of IAQ. Can IAQP be applied in residences. Keep the topic and see if we can get someone to present a paper of case study. KJ Choi to try to set a program.
- F. Demand-based air-cleaner operation to save energy. Brian Krafthefer, Jensen Zhang, Kyle Kisebach, someone from GPC 35 – Brian will work on this after the RTAR on Sensors.
  - 1. Not ready for RTAR.
- G. 3D Printing Topic: needs champion (Paula, Gemma, Marwa, and Dan)
  - I. Brent Stephens has done some work on this subject.
  - II. Paula will ask Brent Stephens for his interest in advancing this topic. Gemma reported that Brent informed her that UL is working on this. We need the TC that handles exhaust. and 2.4 is interest. Kathleen to see what TC might be responsible.
  - III. Change name of topic to Venting for 3D Printers
- H. Effect of particles on loading on gas filters, with possible interest in looking at other combinations of technologies in the same air cleaner (probably a separate project) 2.4 / 2.3/ 2.9 (Matt Brian Paula VJ) Meeting in GPC 35's reserved room @ 9:30 on Monday. [from research chair breakfast: add Brent to WG. Also, he will mention this to 2.4 to see if anyone else wants to help write]

- I. Marijuana – effect on air quality in homes cars etc., Kazukiyo Kumagai (noted that marijuana is still illegal US-wide)
    - I. Mike Vaughn is working to get an answer from ASHRAE as to whether they would consider a topic on marijuana. From research chair breakfast: please write and submit.
  - J. E-cigarette - effect on air quality in homes cars etc. Kazukiyo Kumagai & Shamia Hoque
    - I. Shamia is working on 1<sup>st</sup> draft.
    - II. EHC (Wei) interested, will circulate draft to look for WG interest:
    - III. Cannot get ahold of anyone so project is dead.
  - K. Richard Fox URP plan for VOC and CO2 monitoring – Richard was to send Kathleen information about an idea for VOC and CO2 monitoring and effects at altitude that may result in a URP. Remove from list.
  - I. Matt will review the Unsolicited Research Project that would be conducted in the Netherlands (Schiphol Airport) and bring this up at the main TC 2.3 meeting. Matt reviewed, and he is not aware if he submitted the proposal.
8. New ideas
- A. Jensen, TC 9.9 regarding data centers – there is not enough understanding of the silver and copper corrosion. Consider an RTAR to help understand what is happening in the field. There is no correlation between Lab and field results. Develop a model for assessing – need someone to help write the RTAR. TC 9.9 will come to TC 2.3 for co-sponsorship and help.
  - B. Gemma TRG4 IAQP – support for improving the IAQ method in 62.1. they are putting together a list of compounds. TGR4 has 4 – 62.1 has 16 compounds however it is possible that list was put together to quickly with not enough data. Trying to get data to support a realistic list of design compounds. An RTAR is in process. Jim Dennson is from 62.1 – Jim, Dean and Gemma are working on the RTAR.
    - 1. Evaluation of indoor air contaminants with respect to development of revised designed compound list from 62.1
9. Gas-phase dinner plans
10. Meeting adjourned at 6:45

#### Research Chair Breakfast Notes:

- Marijuana
  - ASHRAE is willing to consider funding projects
  - They will go through an extra layer of consideration in ASRHAE legal
- 1838-WS: RAC will prioritize projects/\$ on Wed to determine which projects go out for bid in fall vs spring. All approved ones should go out no later than spring
- In Houston:
  - 3 RTARS considered, 1 accepted, 1 conditionally accepted, 1 rejected
  - 3 WS: all conditionally accepted
  - One IRG (Innovative Research Grant): approved
- Grant in Aid (GiA) (10-25 grad students, \$10K)
  - Deadline for application: March 1
- Awards:
  - Service to ASHRAE research award - Nomination needed by September 30
  - Homer Adams (grad student) – Nominations due by Dec 3
  - New Investigator, nomination due by Dec 3
- December deadline for WS/RTARs is Dec 3 (not 15<sup>th</sup>)
- PMS Training – RAC will hold another webinar in the Fall – attend this!!!
- Disposition of ASHRAE Research

Attendees:

Andrew Goodby	Ahlstrom Munksjo	Kyung-Ju Choi	Clean & Science
Ashish Mathur	UVDI	Lexuan Zhong	Univ of Alberta
Brian Krafthefer	BCK	Marilyn Listvan	Listvan & Associates
Chris Hsieh	Trane	Matt Middlebrooks	Filtration Group
Chrystal Jolliffe	Columbus Industries	Mick Flom	3M
Dan Haas	Parker Hannifin	Nick Agopian	Renewaire LLC
Daniel Mason	Bioclimatic	Paolo Tronville	Politecnico Di Tonino
David Schaaf	AAF Flanders	Paula Levasseur	LMF Services
Dean Tompkins	Dean Tompkins Group	Pete Freeman	Jacobi Carbon
Gemma Kerr		Rahul Bharadway	AAF Flanders
Henry Greist	Lennox	Sanjeev Hingorani	Lennon Ind
Jeff Roseberry	ProMark Associates	Scott Sherwood	EcoCare Corp
Jensen Zhang	Syracuse	Shannon Schoppman	Lydall
Jonathan Rasala	AAF Flanders	Thad Ptak	AO Smith
Kathleen Owen	Owen Air Filtration Consulting	Tim Ahn	Clean & Science
Kevin Kwong	LMS Technologies	Tony Abate	Atmos Air
Kiarash Kiantaj	LMS Technologies	Vivek Gaux	Columbus Industries