

Draft Minutes
TC 2.3 - Gaseous Contaminants/Removal Equipment
Research Subcommittee Meeting
Sunday, February 5th 6:00PM-8:00PM EST
Omni CNN Center Atlanta, Pine (A-South)

Attendees:

Paula Levasseur	Mick Flom	Vivek Gaur
Caitlin Naske	Chris Muller	Ardeshir Moffukhari
Victoria Binz	Chrystal Jolliffe	Robert Jauch
Gemma Kerr	Bill Hutzel	Christopher Vizcaino
Kathleen Owen	John Randtke	Rui Zhang
Matt Middlebrooks	Dan Mason	Stephen Trent
Brian Krafthefer	Ashish Mathur	Stephanie Light
Kevin Kwong	Paolo Tronville	Dean Tompkins
Henry Greist	Zheniei Liu	
Sanjeev Hingorani	Jeffrey L Roseberry	
Marilyn Listvan	Glenn Brickman	

- 1 Meeting call to order at 6:01 PM
- 2 Introductions and Recording Attendees 5 Min
- 3 Review of Minutes from Winter Virtual Meeting: 5 min
- 4 Chair comments: RAC is caught up on research project after COVID delayed funding. They noted that several projects have gone out to the bidders with no response. The assumption is that the funding estimate is too low with ever rising costs. They are considering raising the \$250K to \$350 K for RAC approval.
- 5 RAC report (Liaison TC2.3- Bill Hutzel) 5-10 min
 - a. Not Present
- 6 Active Projects:
 - a. **1720-RP Validation of gas-phase air-cleaner performance test method (Standard 145.2) by laboratory testing of commercially available filtration devices** – PMS: Gemma Kerr, Paula Levasseur, Chris Muller, Nick Agopian, Marilyn Listvan. PI: Kathleen Owen.
Kathleen submitted and extended time was granted. Early in on writing the final report
 - b. **1838-RP Inclusion of Electronic Air Cleaners** – PMS: Kevin Kwong, Jeff Roseberry, Tony Abate, Nick Agopian, Ashish Mathur, Paula Levasseur. PI: Dean Tompkins; co-PI Kathleen Owen
Final report was submitted and will be voted on in the main TC2.3 meeting.
 - c. **1780-RP, 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. Nick Agopian on PMS. Awarded to University of Saskatchewan.
Nick on PMS- it was awarded, moving slowly, asked for an extension
No update, Nick not at meeting

7 Work statements and RTARs

- a. **1867-RTAR: Development and validation of a model for assessing the corrosion risk of Datacom equipment under different pollution and thermal environmental conditions.** TC 9.9
Update from Chris Muller?
 - i. Some experimental study of temp and humidity, then did some modeling on copper and silver, RTAR was generated, will report back to TC 2.3 at the main meeting after 9.9 meeting.
- b. **1869-WS:** 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.
Champion: Gemma Kerr. WG: James Dennison, Dean Tompkins, Marwa Zaatari, Hoy Bohanon, Wayne Thomann. Made the May 15th deadline and waiting to hear if it will need another review.
- c. **1846-RTAR:** Real Time Small sensors: Brian K., Fuoad Parvin, Thad Ptak, Jeff Roseberry, Sanjeev H., Jensen Zhang, Jordan Clark. Members interested Tony Abate, Sanjeev, Christopher Vizcaino (will be the new champion)
 - i. No more work has been done but someone needs to pull a group together, Brian will stay on
 - ii. Sensor boxes being used in forest fire applications, sensors are getting smaller and smaller, taken off hold
- d. **1858-RTAR:** sVOCs including how SVOC emissions change with temperature - Sanjeev*, Jianshun Zhang, Kevin Kwong, Ying Xu, Brent Stephens, Chang-Seo Lee, Jim Rosenthal, Gabrielle Davis. Work statement was re-written; comments came back and need to be resolved. No work has been done but Sanjeev would like to keep it on/going
- e. **1895-WS** Effect of particles on loading on gas filters, with possible interest in looking at other combinations of technologies in the same air cleaner (Matt, Brian, Paula, VJ). TC 2.4 and GPC 35 co-sponsored.
WS voted on in 2.3, 2.4 letter ballot was sent out. After this meeting comments were addressed from RAC once GPC 35 votes it will be ready for RAC
- f. **1928-WS-** Combination duct and chamber test. Chrystal Jolliffe Champion, Gemma, Kathleen, Cheng-Seo, and Joe Pessa. Ali Bahol and have recently offered to help.
This is sponsored by 2.9, with 2.4 and 2.3 co-sponsors. Work statement submitted for recent deadline
Particles as a surrogate conditionally WS approved just fix minor comments
- g. **1935-RTAR** Effects of increased use of surface disinfectants and hand sanitizers on indoor air quality. Chang Seo, Kathleen, Jensen, Marilyn, Paula Submitted RTAR, it was received on August 17th. Need status from Chang-Seo it appears work statement and RAC comments are not yet completed for submission.
Email from Bill RTAR approved with conditions received nothing from RAC with comments; wants to wait on the WS until she has the comments from RAC. Still interested just waiting. Paula Contacted Donna and is still waiting for RAC comments

- h. **1931-RTAR** Determination of the CO₂ and Aerosol Generation and Metabolic Rates of Occupants for Selected Indoor Activities (from TC 2.1) TC 2.3 co-sponsor comments addressed and co-sponsors revoted to be sent to RAC by March 15th deadline

8 Proposed RTARS and other work:

- a. The Effects of Filtration and Air Cleaning on Health & Safety. Caitlin Naske Champion. Nick Agopian, Lexuan Zhong, Kathleen, Sanjeev, Paula. Add Brent S. after 2.4 Research meeting. Received some comments from Brent and started to incorporate them but not much work has been done. Brent offered to be involved in the group.
- b. Acceptable VOC types and concentrations for inclusion in multi contaminant test gases - **ON HOLD** Ashish to champion, Kathleen, Gemma, and Paula, Chang Seo.
- No work has been done and there is not an update seems like a large project
 - Hank might be too early need to lock into some contaminants to consolidate number of tests
 - Unclear what the purpose of the research is intended to be? Was going to be based on TRG4 results of COC. Lots of sources have been put forward but have not begun working through them (Matt).
 - Goal to modify 145.2 to include a multi gas and what it should be (Ashish). What concentrations can we do (reactions take place) and what mixes work.
 - Discussion that you do not get the same result when you test multi gases versus when you test the same compounds solo. Wanted to look at real life situations.
 - Lawrence Berkley (Hugo) research with three different mixes to represent different spaces. See if there is any updated data on this. Chris Muller will provide some literature for the group
 - Ashish will do an initial review of literature to see what is currently available
- c. Venting for 3D Printers: **Chris V champion**, Paula, Gemma, Marwa, Dan, Joel Foster (2.9), Wayne Tomann (EHC), Marilyn, Matthew Stiegel, Courtney Stanion with Brent talking to 2.4, Dan Mason.
- Are there any other groups such as UL that are working on this research. Do we know what class air it is (John R) not sure what research is currently done; also, how does it tie back into 2.4 would need to be a joint research topic Chris V. to champion, EPA has done some work on this (taken off hold?)
- d. RTAR on 62.2 unvented combustion devices (Nick brought up). They are writing RTAR on this for huge project (millions).
TC 2.4 group of a few people pursuing it also wants to know if this committee is interested. TC 6.10 is also interested Chris V. volunteered to help John R
- e. Gases to dimers, where is the dividing line between particles and gases, nucleation. And how to remove them? Brian's idea, Gemma, Chang-Seo, Dean,
More discussion needed, suggested this may be too academic and ASHARE may not fund- bring to Programs (is now on programs list, remove from research?)
- f. Brian- adsorption and emission of particulates in filters, Brian had done a lit search long ago with only a few, may be newer studies/ research. Caitlin, Paula, Dan, Matt and Kathleen volunteer to help, planned to setup meeting
- g. Potential ideas may come out 1579-RP UT is interested but have yet to put anything together.
- Mengjia reported out (in Toronto)

1. One idea, study the lifetime of ozone removal devices in buildings. Very complex and have not found a good angle on how to approach it at this time
 - a. Humidity is not very significant, but flow rate is
 - b. Particle and gas loading on the devices
 - ii. Could potentially be 2 RTAR
 - iii. Matt Middlebrooks is willing to help with the VOC and particle loaded concept
 - iv. Interested but has not had the time to get to it, but there will likely be something coming from this soon
- h. “Impact of Age on Air Cleaning Devices” Cleaning secondary products from the air- John Randtke, Marwa, Jianshun, Brian K, and Jeff Roseberry interested in helping **ON HOLD**
- i. Impact of age of electronic air cleaning devices, looking at ozone and potentially harmful contaminants as equipment ages
 1. Investigate how performance degrades over time, how long are they effective, ozone generation with age
 2. Intends to coordinate with manufactures who have equipment installed pre-pandemic, and during the pandemic
 3. Laboratory test, equipment will be taken out of the field and taken back to a lab to test
 4. 185.5 put on hold until the work is done in 185.5 because some of the procedures may be useful for this
 - i. New Ideas
 - i. Brian – automatic oven cleaners; not much interest
 - ii. Chris V. - PFAS is it a particle or a gas, is carbon effective in removing it in air, technology is already used in water, used in a lot of pan and cookware emerging contaminant, will give a presentation on some of the information he has on the topic
 - iii. Affordable sensors right now the reliable technologies are very expensive
 - iv. Brian - What percentage of residential building use gas phase <1%, being talked about in 62.2, Residential air cleaners on our radar (AHAM AC4 – portable unit)
 - v. What’s better in room air cleaners or in system filters? Literature search into what is out there. Where is the best place to put in filtration? Put it out as a forum with TC 2.4 move to Programs.