

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

1. Meeting was called to order at 5:01pm
2. Introductions and Sign-In
3. Review of Minutes from Long Beach
 - A. Minutes were approved as written
4. RAC Report (Liaison TC 2.3 – Pawel W)
 - A. **There is an additional submission deadline date of March 15, 2018.**
 - B. **The submission of RP disposition forms by the PMS with our liaison is required once a project is finished. There is a new, simple form. RAC is considering stopping processing new RTARs and WSeS for TCs who don't turn in their disposition forms. (Note that we do not have any due now).**
 - C. **Pawel believes that most ASHRAE research funding will be used up in the first half of 2018. 11 projects are expected to go out for bid in the spring.**
 - D. **Pawel requested more RTARs**
 - E. **There were several items that needed follow-up which Kathleen planned to pursue at the research chair breakfast. See notes at the end of the minutes.**
5. Active Projects
 - A. The only active project we had was returned to ASHRAE. See notes in section 6.
6. Work statements, RTARs, and RPs – Updates
 - 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. Was awarded to RTI, but RTI cancelled. A revised bidders list must be turned in by February 19th for the project to go out for rebid in the Spring.**
 - I. **RTI returned 1720-TRP to ASHRAE. Pawel relayed to Kathleen that this project may be delayed until Fall.**
 - II. **Two bidders were found on Sunday before the meeting to make a total of 4.**
 - III. **Paula/Kathleen need to get the updated bidders list to Donna Daniels (completed on Monday)**
 - B. **1579-TRP Testing and Evaluation of Ozone Filters for Improving IAQ— Sanjeev Hingorani, Kevin Kwong Matt Middlebrooks Nick Agopian, Thad Ptak are on the PES. Resubmitted 8/15/17.**
 - I. **Paula sent approvals to Donna Daniels with some minor changes. An additional member from EHC (a cosponsor) was added to the PMS list. Before Chicago, we were told this was ready to go out for bid in the spring. In Chicago we have been told it might not go until fall.**
 - 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.**
 - I. **No Update**
 - 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. WS revised per comments; new draft sent for new votes 1/7/18.**

- I. The work statement was rewritten, but TC9.10 did not have the 2.3 people help with the revision. A vote went out to TC 2.3 members via email ballot. Marwa will update Kathleen with vote results. Due to some unreturned email ballots, **this WS may be brought up for another vote at the main TC 2.3 meeting on Tuesday.**
 - II. TC 5.5 will also vote on co-sponsoring this WS at their meeting. TC 5.5 has concerns with the scope and writing. Matthew Friedlander of 5.5 joined us to ask us to be sure that the 3 TCs work together to make the WS better.
 - III. Assuming that 9.10 does not go ahead and resubmit as is, Kathleen will reach out to both committees about this WS.
- E. **1838-RTAR Testing of Electronic Air Cleaners** – 145 & 62.1 - Submitted for 8/15/17 deadline
- I. Kathleen will get an update on this RTAR at the research chair breakfast on Monday.
 - II. This RTAR was reviewed at the fall RAC meeting. A letter to us was drafted and apparently sent without any of us receiving it. Mike Vaughn sent Kathleen a copy Sunday evening. It was accepted conditionally with a few comments that need to be resolved with Pawel (not RAC) before the WS is written. The WG is to meet on Tuesday to address those comments.
- 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, then submit.
- I. **62.1 has not yet voted. This RTAR should be ready for submission after Chicago.**
7. Proposed RTARS and other work: status updates
- A. sVOCs including how SVOC emissions change with temperature - Sanjeev*, Jianshun Zhang, Kevin Kwong
 - I. Kathleen will find out results of co-sponsorship votes. However, Pawel believes that co-sponsorships are not required for the RTAR stage.
 - II. Pawel will check on the necessity of co-sponsorships for RTARs.
 - B. Real Time Small sensors: Brian K., Marilyn Listvan, Fuoad Parvin, Lu Lui, Thad Ptak, Jeff Roseberry, Dave Space, Sanjeev H., Jensen Zhang.
 - I. RTAR was submitted. Pawel commented on the RTAR and Brian answered comments. EHC responded with many ‘No’ comments. The working group needs to respond to EHC comments and then resubmit or chose to not have cosponsorship.
 - II. Kathleen will send the RTAR and EHC comments to Brian’s working group.
 - III. Lu Lui should be removed from this group.
 - IV. Add Paula to the working group
 - C. Consumer Product used by Occupants, Related Pollution Loads - Chang-Seo Lee*, Thad Ptak, Marilyn Listvan
 - I. Chang-Seo received comments from Pawel and will forward them on to the working group. Chang-Seo hopes to rewrite by March.
 - D. 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.
 - I. Add Ashish to the working group
 - II. Jensen will send some comments and references to Kathleen.
 - III. Kathleen and Tony to meet on Monday to discuss how to move forward.
 - E. The effects of filtration on health. Dean Tompkins, Nick Agopian, with EHC interest.
 - I. Kathleen will talk to Dean. It was suggested that this topic be left until the summer meeting in Houston.
 - F. Multi-contaminant challenge what acceptable VOC levels-on hold
 - I. Ashish, Jensen, and Gemma expressed interest in leaving this idea on the list
 - II. Ask at the summer Houston meeting for a champion
 - G. The role of gas filtration improving IAQ in Residences – Jensen, Nick and Kathleen.
 - I. Jensen will review the modeling framework coming out of IEA-EBC Annex 68 and report at the Houston meeting.

- H. Using specially treated textiles to reduce odors (the effect would be similar to using room air-cleaners). Arsen Melikov champion, Ashish, Paula Levasseur.
 - I. Remove this topic from the list
- I. 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.
 - I. This idea in on pause for now
 - II. Kathleen will send a reminder to this group
- J. 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.
- K. 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)
 - I. TC 2.9 brought up this topic. Brian Hafendorfer suggested a MTG as the best path forward whereas Mike Corbat suggested an RTAR.
 - II. Ashish suggested holding a forum in TC 2.9 for this topic before deciding on how to proceed.
 - III. Marilyn will bring this topic up in TC 2.4.
 - IV. Ashish will send the title of the program to Marilyn.
 - V. Scott will bring this topic up in TC 5.10.
 - VI. Matt and Brian will check with GPC 35 for ideas and co-sponsorship of a RTAR.
- L. Marijuana – effect on air quality in homes cars etc., Kazukiyo Kumagai (noted that marijuana is still illegal US-wide) EHC doing RTAR – Jeff Siegel a good contact
 - I. Kathleen will ask Mike Vaughn if ASHRAE will even consider a topic on marijuana.
 - II. Paula, Jeff R., Scott, and Chang-Seo are interested in this topic if approved by Mike.
 - III. The title should be revised and Paula floated the idea of “Environmental Impact of Marijuana Grow Facilities”.
 - IV. Charlene will send CDC papers to Paula.
 - V. Charlene will bring this topic up to EHC.
 - VI. (added after meeting) Mike Vaughn didn’t know ASHRAE’s position. He will check with TAC on Wednesday.
- M. E-cigarette - effect on air quality in homes cars etc., Kazukiyo Kumagai & Shamia Hoque
 - I. Shamia is still interested. Shamia says that there is more research on the impacts of e-cigarettes on health rather than on the impacts of e-cigarettes on indoor air quality.
 - II. Needs to contact EHC. Kathleen will put Shamia in touch with EHC research chair or other folks there.

8. New ideas

- A. Richard Fox will send Kathleen information about an idea for VOC and CO2 monitoring and effects at altitude that may result in a URP.
- B. 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.

9. Meeting was adjourned at 6:40pm

10. Research Chair Breakfast Notes (added after the Monday morning meeting)

- A. 2.3 had 2 projects that we had already been told would go out for bid in Spring. It now looks like they won’t go out until fall. However, the decision won’t be made until Wednesday.
- B. RTAR and WS submission: RAC added March 15 deadline. M – M – A – D
- C. PMS training occurred on-line on November 1, 88 attendees. Another session planned for Spring 2018
- D. Research disposition form: reminder to PMSes to do this form. RAC may stop processing new RTARs/WS if we don’t (2.3 doesn’t have any of these due now)

- E. RAC meeting
 - 1. 2 RTARs considered, both accepted with comments
 - 2. 2 Work Statements considered – both returned
 - 3. Voted to release all outstanding TRPs for bid
- F. HUGE Caveat: somehow the RTARs and WSEs that the research chairs think are in the discussion list aren't all there.
- G. Six finalists for the Innovative Research Grant (IRG) proposal were selected
- H. Please include full votes of sponsoring and co-sponsoring TCs on RTAR and WS submission forms
- I. Ensure co-sponsored research projects are multidisciplinary
- J. Conditionally approved RTARs must acknowledge how conditions were cleared (put a cover letter or email with the new submission to clearly show what was done – don't make RAC look for it)
- K. Be sure to include milestones in WS
- L. 1838-RTAR was reviewed by RAC (conditionally accepted) and a letter sent, but none of us got it back in Nov. Mike resent it on Sunday. It was accepted conditionally with only Pawel approval needed to move forward.

Meeting Attendees:

Kathleen Owen	Owen Air Filt. Consulting	Matt Middlebrooks	Filtration Group
Gemma Kerr	Retired	Ashish Mathur	UVDI
Marilyn Listvan	Listvan Consulting	Kyung-Ju Choi	Clean & Science
Dan Haas	Parker Hannifin	Jensen Zhang	Syracuse
Fuoad Parvin	Halton	Brian Krafthefer	BCK
Sanjeev Hingorani	Lennox Industries	Tony Abate	Atmos Air
Scott Sherwood	EcoCare Corp	Mick Flom	3M
Kevin Kwong	LMS Technologies	Vivekanand Gaur	Columbus Industries
Shamia Hoque	Univ of South Carolina	Charlene Bayer	Hygieia Sciences
Paula Levasseur	Cameron Great Lakes	Rahul Bharadwaj	AAF Flanders
Len Duello	Georgia Pacific	Richard Fox	Honeywell
Andreas Bezold	Airbus	Lubos Forejt	Honeywell
Chang-Seo Lee	Concordia University	Peter McKinney	
Thad Ptak	AO Smith	Shawn (Sheng-Chieh) Chen	VCU / UMN
Chrystal Jolliffe	Columbus Industries	Peter Freeman	Jacobi
Dave Schaaf	AAF Flanders	Henry Geist	Lennox
Al Vatine	LMS Technologies	Vivek Gaur	Columbus Industries
Jeffrey Roseberry	ProMark Associates, Inc.	Nicholas Clements	Well Living Lab
Jim Langer	Serionix		