

DRAFT Minutes
TC 2.3 - Gaseous Contaminants/Removal Equipment
Research Subcommittee Meeting
Sunday, June 25th 6:00PM-8:00PM EST
Tampa Marriott Waterside, Meeting Room 11 (3)

Attendees

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|------------------------------|------------------------------------|--|
| Caitlin Naske/ Dynamic AQS | Victoria Binz/ Dynamic AQS | Paula Levasseur / LMF |
| Gemma Kerr / retired | Matt Middlebrooks/ Filtration Grp. | Kevin Kwong. LMS Technology |
| Henry Geist/ Lennox | Sanjeev Hingorani / Lennox | Marilyn Listvan /consultant |
| Mick Flom / 3M | Chris Muller / AAF | Chrystal Joliffe / Carrier |
| Bill Hutzel / RAC | John Randke/ Schneider Electric | Paolo Tronville/ Politecnico di Torino |
| Zheniei Liu / Syracuse Univ. | Jeffrey Roseberry / Promark | Vivek Gaur / Columbus Ind. |
| Nick Agopian / Renew Air | Eloise Parry-Nweye/ Syracuse U. | Gabrielle Davis / Camfil USA |
| Scott Sherwood / Eco- Care | Kyung Ju Choi/ Clean& Science | Mengjia Tang / UT Austin |
| Daniel Rush / UT Austin | Atila Noviselac / UT Austin | Lexuan Zhong/ Univ of Alberta |
| Jianshun Zhang / Syracuse U. | Sissi Liu / Metalmark | Timothy Ahn / Clean & Science |
| Beverly Guo/ Syracuse U. | | |

- 1 Meeting call to order at 6:00
- 2 Introductions and Recording Attendees
- 3 Review of Minutes from Winter Virtual Meeting: Minutes approved
- 4 Chair comments: A reminder of the several research awards that are given out: New Investigator Award, Homer Addams Award, Service to ASHRAE Research (they need nominations) and Innovative research grant. RAC’s budget for project approvals has increased from 250k to 350K.
- 5 RAC report (Liaison TC2.3- Bill Hutzel) 5-10 min Bill’s last meeting next is Chris Grey. Cost of research is going up, current is 250k- may go up to 300k limit (pending)
- 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. Final report to PMS Final report is being reviewed by the PMS. Prepared to accept the report, some non-substantive changes. Will get finalized, need to have TC vote on the final report and then submit.

- b. **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 Final report was approved

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
- ii. Plan to resubmit WS was returned with comments, TC 2.3 and TC 2.4 will be asked as a co-sponsor. Looking for people who are interested to do a critical review of WS before resubmitted to RAC
- b. **1869-TRP:** 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. 3 bids we received and sent to PES on June 6th. Met prior to meeting and decided on a bidder. Potentially get started in the fall.
- c. **1846-RTAR:** Real Time Small sensors: Brian K., Fuoad Parvin, Thad Ptak, Jeff Roseberry, Sanjeev H., Jensen Zhang, Jordan Clark. Add Vivek and Marilyn Members interested Tony Abate, Sanjeev, Christopher Vizcaino (will be the new champion) taken off hold
- i. No more work has been done but someone needs to pull a group together, Brian will stay on
- ii. Sanjeev will take over as champion and will reach out to Brian to see what was done.
- iii. General topic to look at TVOCs and how it interacted with the environment- evaluating the sensors, what is available in the market
- iv. Returned as an RTAR (2018) still active- does Kathleen have a copy? (Bill cannot find)- may have to restart. Sanjeev has Emailed Brian
- 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 Will reply to comments
- 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 Need an update- Paula will Email Brian May have needed more than one co-sponsor GPC 35 voted earlier this year (this could be the next TRP) Brian- answered RAC comments and waiting on GPC 35 vote- has been resubmitted to 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 last deadline with minor changes. Approved but need to clean up voting for co-sponsorship remaining to vote

during Tampa EHC and TC 2.3

- 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.
Last status- Email from Bill saying RTAR approved with conditions, did not receive RAC comments Never got official RAC report, Paula will Email Donna & Bill will look into. Paula will also reach out to Chang Seo if she is still interested
- 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 Update from TC 2.1, has been approved and now working on WS. Need a member of 2.3 as a member of PMS. Activities- commercial kitchens, office, etc. Primary goal is to measure the metabolic rate, also wanted to include info related to pandemic. Collect some data and include equation that was previously included. There is currently no data or model for commercial kitchen. Paolo T. for PMS- Tori to get a copy of RTAR

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, Brent S. Group met, updating RTAR to focus on events of indoor cleaning and smoke events, Will target August
- b. Acceptable VOC types and concentrations for inclusion in multi contaminant test gases - **ON HOLD** Ashish to champion, Kathleen, Gemma, and Paula, Chang Seo. Add Caitlin
- 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.
 - Ashish will do an initial review of literature to see what is currently available
 - Could be useful in 145.4 test development, AHAM did some research for AC-4 and have a mixture of 3 allowed during test
 - Make a seminar or forum? To get input on testing of mixture of gases- taking off list of RTAR and send to Program
- 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. Would need significant input from another TC- will remove from list with no champion (there was no real interest in 2.4) would be both gas and particulate but the issue is that would be more an exhaust application/ group. A program instead? There has been a lot of interest
- d. RTAR on 62.2 unvented combustion devices (Nick brought up). They are writing RTAR on this for huge project (millions). Chris V. volunteered to help John R Remove from list:
- e. Brian- adsorption and emission from 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 Nothing has been done, maybe just a literature search? Caitlin willing to take over as champion after getting health and filtration RTAR through
- f. 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.
 - a. Humidity is not very significant, but flow rate is
 - b. Particle and gas loading on the devices
- ii. Matt Middlebrooks is willing to help with the VOC and particle loaded concept
- iii. Mengjia, Matt, Jensen, Atila to work on RTAR
- g. “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 for 185.5 will need a test method**
- h. Future Ideas
 - i. 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
 - ii. Affordable sensors right now the reliable technologies are very expensive
 - iii. 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)
 - iv. 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? Debate? This topic is important. Put in the IAQ column in the ASHRAE journal? What smells good vs what is good for you
 - v. Nick- IAQP and 145.4 Can’t use Ef but can use CADR- understanding the difference between them (is this understood?). Example Ef=90% may be the same as CADR of 40 but the 90 looks “better” It’s not obvious how to use CADR in current 62.1 mass balance calculations (needs to be determined). More research needed? Can a relationship be established between the two and understand the end result 1928 could be helpful (particles). Nick- proposing RTAR for understanding the equivalency Ef and CADR. One of the outputs of 185.5 is to have inputs for 241 and 62.1. Bring topic to 185.5
 - vi. Matt- new group TG 9. SPACE gas phase is critical (to be aware of) Meet 6/26/23.
 - vii. 2.9 Research 1854 inactivation rates (lit search)- new topic interest writing an RTAR on UV photochemistry effects and secondary aerosols/ byproducts- gas and particulates (UV initiated indoor chemistry). Type of UV has not been defined- let the researcher decide? At initial phase- brainstorming and may be multiple RTARs. Nick and Zhenlei is interested

9 Adjourn: 7:42