

**TC 2.3 - Gaseous Contaminants/Removal Equipment  
Research Subcommittee Meeting  
Atlanta, IL Sunday 5:00-7:00 pm**

1. Meeting was called order at 5:10
2. Introductions and Sign-In – see list of attendees at the bottom of the file.
3. Review of Minutes from Chicago - No corrections
4. RAC Report (Liaison TC 2.3 - Harvey Sachs)
  - 1579 is all Harvey had on the agenda. We need to contact RAC asap to let them know this is still a live WS.
  - Pawel Wargocki is our new RAC liaison for the next 4 years. He was a member of 62.1 and prior was head of environmental health committee.
5. Brainstorming – What is important to us?  
Kathleen asked for input in one word as to what is important to meeting participants. After reading TC 2.3 scope several people offered opinions.

What is important to you? – emission rate (source strength), contaminant loading in spaces, desorption of filters – both gas and particulate, multi contaminant challenge, real time small sensors easily applied, service life, ozone production, acceptable VOC mixture – trace VOCs in the air – what is the acceptable level? How do we come up with target values? were the items brought up in this discussion.

6. Up-Dates on Current Research Project
  - A. 1457-RP “By-product Production from Photocatalytic Oxidation Associated with Indoor Air cleaning Devices” PI - Ramsey Kropp.

Kathleen Owen – U of W has not responded to ASHRAE. Mike Vaughn has to work with the contractor (University of Wisconsin with Mark Anderson as PI), and the contractor has not responded. TC will vote on continuation of project at the main meeting.

Dean Tompkins – updated final report sent to 4 people on the PMS. Ramsey Kropp (PhD student who did much of the work on the project) is available in July and August half time as is Dean. Dean has the equipment to finish. Dean will finish regardless of AHSRAE’s involvement. Drop dead date for all data gathering is September 15<sup>th</sup> 2015.

However Marilyn pointed out that we had a drop dead date over a year ago with no results. In response to Dean’s question if there was a path forward, it was suggested that Dean should try to talk to Mike Vaughn as the official ASHRAE contact. – Brad suggested going to the headquarters office and schedule the meeting.

Kathleen noted that Dean is no longer the person responsible. Marc Anderson became the PI of the project for UW years ago when Dean left the project.

Harvey Sachs clarified that in terms of the contract it is the University of Wisconsin – they must send a letter to Mike Vaughn making Dean the contractor. Matt Middlebrooks says the PMS is against moving forward.

Discussion ended.

7. Work statements & RTARs - Update
  - A. 1579-WS Testing and Evaluation of Ozone Filters for Improving IAQ - Bill Lull, Ashish, Brad, and Jeff, Dave Chojnowski, Michael Sexsmith and Sanjeev Hingorani –
    - I. Bill is backing out – lost his files. Needs a new champion.
    - II. Matt Middlebrooks has volunteered to take over. Either Gemma or Kathleen will forward the draft. Harvey needs an email so the WS does not die on June 28<sup>th</sup>. Send to MORTS and copy Harvey. Gemma will send Matt the draft – Brad to send data to Matt, Bill Lull to send files that Chris Muller had forwarded to Bill. From these documents Matt will proceed with the WS.
  - B. 1720-WS Validation of gas-phase air-cleaner performance test method (Standard 145.2) by laboratory testing of commercially available filtration devices. Gemma Kerr, champion. Writing WG: Dave Ch, Matt Middlebrooks, and Charlene:
    - I. Draft was completed in February – need to put in milestones. Gemma needs more guidance from the people who have requested changes. What type of milestones – payment milestones. Brad sent out an email to Gemma with a couple of small changes.
    - II. Pawel our new liaison will see if we can set milestones for payment. Send him an email he will put it on the agenda with the new head of RAC. (see Research Chair Breakfasts notes at the end of the minutes)
    - III. The goal is to get this WS submitted before the next deadline in August.
  - C. WS or RP 1614 – (kitchen hood effectiveness of UV systems) – B Kraftheffer : The bid went out, and the PES will be making a selection on the contractor. TC will have to vote. Brian is on PES/PMS. (later report: costs on proposals too high, so committee is revising the WS/starting process over again, to be sent out for bid again after revision)
  - D. WS1755 – Impact of gaseous contamination and high humidity on the reliable operation of information technology equipment in data centers. (TC, 9.9 cosponsoring) Chris Muller is on the PMS. Should be out for bid in the fall.
    - I. They are going to data centers with no humidity control – they are trying to determine the critical humidity range.
    - II. Final work statement is being voted on in 9.9 research subcommittee meeting. PMS has voted to approve.
8. Proposed RTARs and other work: status updates
  - A. Field performance of typical gas-phase air cleaning technologies over service life. Brad Stanley, Jensen Zhang : This is finished no path to an RTAR. Remove from list.
  - B. sVOCs including how SVOC emissions change with temperature - Jensen Zhang & Sanjeev
    - I. They have all the materials but they have not been put on the RTAR form.
    - II. Ying Xu is going to be added to the project; she has all the data:
  - C. Remaining Life Analysis Test Method for Gas-Phase Medias - Matt Middlebrooks, Paula Levasseur, Brad Stanley, and Ashish Mathur. No path to RTAR. Delete from list.
  - D. Determination of the Exhaust air Contaminant Transfer Ratios (ECTR) for selected typical exhaust airborne contaminants while using commercially available air-to-air energy recovery ventilation (ERV) devices or systems in HVAC systems applications (RTAR may be in progress in TC5.5)
    - I. Nick Agopian. AHRI has a test standard 1060 – to test efficacy of energy recovery technology (wheels, plates etc.)☺ EATR – exhaust air transfer ratio is calculated. TC 5.5 is against 2.3 getting involved. They claim that there is no transfer of gaseous contaminants. There is data however that there are gases in the air being transferred based on research done by Lawrence Berkeley Labs it shows formaldehyde being transferred.

- II. Nick will write something up with Kathleen, Chang Seo and Dan Mason. Once written they will approach 5.5 for co-sponsor.
- E. Demand-based air-cleaner operation to save energy. Brian Krafthefer and Jensen Zhang: Brian has about ¾ of the RTAR finished. He basically needs to put it in an RTAR form. Brian to send to Jensen for comments, then it will be sent to Kathleen for submission to our liaison Pawel.
- F. Bio-effluent emission rates to assist IAQP calculations - Chang-Seo Lee, Pawel Wargocki:
  - I. It is not bioeffluents it is the consumer products that are used for example in perfumes. Chang-Seo has done some research. Pawel clarified it is not only bioeffluents it is the cosmetic products that we bring into the space. We should study how these react with ozone in the space and what are the byproducts.
  - II. Dean Tompkins will join the team. They will come up with a new title to include other products.
- G. Using specially treated textiles to reduce odors (the effect would be similar to using room air-cleaners). Arsen Melikov champion, Ashish. Not much has been done on this topic.
- H. Bipolar Ionization (process uses needlepoint technology to produce both positive and negative ions) performance test method for VOC removal and testing a variety of commercially-available ionization devices. Scott Sherwood champion, Jensen, Dean Tompkins, Charlie Waddell, Chang-Seo.
  - I. Scott reported that he and Charlie have started to fill out the RTAR and they need help finishing up the RTAR. Marilyn Listvan has volunteered to work on the RTAR.
  - II. Connect it to SPC145.2 test method.

9. Ideas up for Adoption

- A. IAQP field studies - Charlene – champion for reviving old RTAR- This is going nowhere – Charlene is too busy we need a new Champion.
  - I. Volunteers are Marwa Zaatari, Anthony Abate and Dean Tompkins to resurrect this project. (See Research Chair Breakfast notes below)
- B. The effects of filtration on health (a project from the EHC priority list) - Charlene Bayer- Charlene too busy to work on this.
 

Pawel indicated the EHC has done nothings so TC 2.3 must be involved. Work has been done on the particulate effects. Chronic and acute health effects – Dean Tompkins expressed interest. Nick Agopian says this is related to IAQP, which is being sold as energy savings but it does improve IAQ and should be pursued. Dean is going to Champion and Nick will work with him. Study involved health data. Ed Light asked if the committee consider a multidisciplinary approach with industrial hygienist. There is very little real data. Marilyn to go to EHC research to see if anything is being done. (See Research Chair Breakfast notes below)

10. New Business

None

11. Working Groups

12. Adjourn - Meeting adjourned at 6:55

13. Research Chair Breakfast notes (breakfast occurs after our research subcommittee meeting)

- There are 61 active projects worth \$10M, 11 new projects approved, 13 TRP released for bid
- In Atlanta:
  - RTARs 9 evaluated, 3 accepted, 4 accepted with comments, 3 rejected
  - WS: 4 accepted as is, 1 accepted conditionally, 1 returned, 2 rejected
  - 8 TRPs and 4 URPs under consideration

- New Push by RAC: **Milestones.** In addition, to milestones to allow the PMS to have input to the project direction, funding milestones should be included and must be linked to % of budget to be paid when that milestone is approved by the PMS. During the project, a questionnaire will be sent to the PMS Chair at each milestone to obtain project status.
- ASHRAE Strategic Plan – there is a 2014 Strategic Plan – <https://www.ashrae.org/about-ashrae/strategic-planning-documents/ashrae-strategic-plan-2014>
- Web-based modules: by June 2016, there will be training available on:
  - RTAR writing
  - WS writing
  - PES duties
  - PMS duties
- 1625-RTAR must be resubmitted (when?) or notice sent to RAC to tell them we are reviving it. Kathleen plans to bring this up at 2.3 Main as she believes we should let the number die out and start over. The current RTAR is in the old format, is very long (new form is very short), and new ideas are not necessarily close to those planned years ago.
- 1720 must go in by August or it will be dropped (there is probably an option if we ask for longer ahead)
- Kathleen talked to EHC research chair (Jeff Siegel). They do not have plans to work on health effects from changing gas-phase filtration. However, they would like to work with us or have one of us go to their meetings and getting an RTAR started through them.

Attendees			
Kathleen Owen	RTI	Charlie Waddell	Global Plasma Solutions
Dan Mason	Bioclimatic Air Systems	Scott Sherwood	Eco-Care Corp.
Kyung-Ju Choi	C & S	Paula Levasseur	CGL
William Lull	Garrison/Lull Inc.	Brad Stanley	AAF
Ed Light	Building Dynamics	Peter Freeman	Jacobi Carbons
Tony Abate	Atmos Air	Gemma Kerr	Retired
Keith Chesson	Clarcor Air	Kevin Kwong	LMS Technology
Brian Hafendorfer	Trane	Anja Coenen	FFT
Paolo Tronville	Politecnico DiTorino	Dan Haas	Clarcor
Matt Middlebrooks	Filtration Group	Dean Tompkins	Dean Tompkins Group
Marwa Zaatari	EnVerid Systems	Chang-Seo Lee	Concordia Univ.
Chris Muller	Purafil	Nick Agopian	Renewaire LLC
Marilyn Listvan	Listvan & Assoc.	Brian Krafthefer	BCK
Arsen Melikov	Tech Univ of DK	Jensen Zhang	Syracuse
Pawel Wargocki	Tech Univ of DK	Sanjeev K Hingorani	Lennox