



# ASHRAE Meeting MINUTES

## TC 9.6 Health Care Facilities

### Tampa/Hybrid Annual Meeting

Main Meeting: Sunday, June 25, 2023, 5:00 to 7:00 PM

Location, Tampa Marriott Waterside, Grand Salon E(2)

(Lemire, Chair; Mead, Vice-Chair; Eldridge; Secretary)

Subcommittee meetings will be held in person AND virtually at the following dates and times:

TC 9.6 Infectious Diseases	(Mead, Chair)	Sunday, June 25, 2:00-3:30 pm EST
TC 9.6 Research	(Thomsen, Chair)	Sunday, June 25, 3:30-4:30 pm EST
TC 9.6 Handbook	(Likhonin, Chair)	Sunday, June 25, 12:00-12:30 pm EST
TC 9.6 Energy	(Pratt, Chair)	Sunday, June 25, 12:30-1:30 pm EST
TC 9.6 Program	(Granzow, Chair)	Sunday, June 25, 1:30-2:00 pm EST

### ASHRAE Code of Ethics Commitment

*In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interest. (See full Code of Ethics: <https://www.ashrae.org/about/governance/code-of-ethics>)*

### ASHRAE Commitment to Care

*The health and safety of all ASHRAE conference attendees is a top priority. Out of respect for our fellow attendees, we commit to wear masks indoors, monitor our health, seek medical attention if symptoms develop and adhere to all ASHRAE Commitment to Care protocols. We are committed to the well-being of one another.*

Item	Description	Person	Time (min)
1	Introductions, agenda, conference call and attendance documentation instructions 50 people in live attendance 20 virtual (excluding live)	Lemire	5
2	Roll call, quorum check. Amit Bhansali – Y – in person Dan Koenigshofer Y - remote David Eldridge Y – in person Dylan Neu - NO	Eldridge	2

	<p><b>Ehsan Mousavi - NO</b>  George Augustini Y – in person  Jeremy Fauber Y – in person  Larry Wilson Y - remote  Melvin Glass - Y – remote (late confirm)  Roger Lautz Y - remote  Eric Granzow Y – in person  Erick Phelps Y in person  <b>Steven Friedman - No</b>  Frank Mills Y – in person  Nick Lemire Y – in person</p> <p>8 in person  5 remote  Quorum is achieved 13 / 16</p>		
3	<p>Minutes  Atlanta minutes sent by email earlier today  12-0 approved</p>	Eldridge	5
4	<p>Membership Chair Report, Roster Changes,  Welcome PCM's  See PDF</p> <ul style="list-style-type: none"> <li>• 205 overall members</li> <li>• 14 voting members</li> <li>• 107 corresponding members</li> <li>• 68 provisional corresponding members</li> <li>• 39 YEA members</li> <li>• Roster update coming through for next week</li> <li>• Rolling off: Nick, DSE, Melvin, Roger, George, Dan, Jeremy</li> <li>• Rolling in: Ken, Burley, Thompson, English, Condrat, Nic Member Non-Quorum</li> <li>• Travis taking over handbook, Jennifer Leach for energy, Dylan Neu for ID</li> <li>•</li> </ul>	Westbrook	5
5	<p>Vice Chair's Report TAC Breakfast Meeting</p> <p>GTIC (new ITI) focusing on four ISO standards to integrate with ASHRAE:</p> <ul style="list-style-type: none"> <li>• 205</li> <li>• 163</li> <li>• 86</li> <li>• 142 – cleaning equipment for air</li> </ul> <p>New Applications Handbook – looking to thin it down or split to two volumes.</p>	Mead	3

	Brendan Burley additional comments.		
6	<p>IAQ Pathogen Mitigation Standard</p> <ul style="list-style-type: none"> <li>• Update by Bill Bahnfleth SSPC-241P</li> <li>• Doesn't override OA requirements, applies at the room level</li> <li>• Technology agnostic procedures for assessing air cleaning equipment</li> <li>• Several members of the TC contributed</li> <li>• Now an SSPC from SPC</li> <li>• 25 minute presentation tomorrow morning</li> </ul>	Bahnfleth	5
7	<p>Handbook Subcommittee Report</p> <p>Chapter is out in the recent book. Thanks Pavel, Mike! There are a few dental errata hanging out there in the online version</p> <p>Travis will be the next handbook chair.</p> <p>Additional remarks by Paul Suppan</p>	Likhonin	5
8	<p>Energy Subcommittee Report</p> <p>Revisit the Title Purpose and Scope prior to Chicago</p> <p>Let Jennifer know to contribute to the TPS</p>	Leach	5
9	<p>Programs Subcommittee Report</p> <p>Brief meeting recapping the programs at this conference, reviewed Chicago/Indianapolis potential presentations.</p> <p>TC 9.12 wants to do a Tall Building track, including a special track of tall healthcare buildings.</p>	Granzow	5
10	<p>Infectious Diseases Subcommittee Report</p> <p>Dylan Neu taking over the subcommittee chair. ETF healthcare subcommittee, will hand off to the TC subcommittee.</p> <p>241P as described earlier in the main meeting by Bill Bahnfleth.</p>	Mead	5

	<p>CDC updates</p> <p>Katherine Ratliff from EPA ORD describing emerging technologies.</p> <p>Consider the future potential for the next bug to come along.</p> <p>By chat: Linda Lee volunteers to vice-chair the subcommittee</p>		
11	<p>Research Subcommittee Report</p> <p>Approximately 30 attendees  Presentation from COR-3 big data analysis  Two current active RP  Three WS for bid  Three WS underway  Four RTAR topics  Zero PTAR  Great ongoing relationship with Standard 170</p> <p>Public SSI data correlate to annual TAB reports</p> <p>See PDF of slides for detailed report.</p> <p>RAC now able to recommend \$350,000 projects up from \$250,000 without ASHRAE Board approval</p> <p>Seeking help on four RTARs and to get the next topics to feed the pipeline.</p>	Thomsen	5
12	<p>Webmaster Report</p> <p>No report</p>	Augustini	3
13	<p>Section Head Comments</p> <p>Please reach out with any comments</p>	Cochran	5
14	<p>ALI</p> <p>Currently teaching the course</p>	Burrough	3
15	<p>Liaison Reports</p> <p>-Std. 170 – Guideline 43 vote out this conference. Addendum J also to be voted on. Several working groups, collaboration with FGI, addenda will be</p>	<p>Fauber</p> <p>Vernon</p> <p>Sheerin</p>	<p>2</p> <p>2</p> <p>-</p> <p>2</p>

	<p>later this year and early next year to meet publishing schedule. FGI comment period is open right now.</p> <p>-Std. 189.3 – Jeremy filling in – it meets tomorrow, addenda voted on to come out. Reviewed the 189.1 addenda and bring in changes that make sense to healthcare. Updates for medical gases. Frank Mills: TC 2.8 having a seminar tomorrow about 189</p> <p>-Std. 188 – ...</p> <p>-Std 90.1 – ...</p> <p>-Std 55 – Mike Meteyer reports that there is some interested to use the clo data collected and make updates.</p> <p>-Std 62 - responded to CMPs, proposed a 241P forum, working on implementing a density correction, working on humidity corrections. Public display of ventilation rates and increased minimum filtration will be held over. OA flow monitoring was rejected.</p> <p>-Environmental Health – meeting tomorrow</p>	<p>Poots Burley ----</p>	<p>2 2 2</p>
16	<p>Healthcare Decarbonization Guide (ASHRAE/ASHE collaboration) – DSE absent during this section, get summary from Kara.</p>	Kara Brooks	5
17	<p>Update on Design Guide for Zero Net Energy Hospitals – everyone would like to publish, Jaap is at the meeting and wants to get it published. Minor revisions to account for recent events. The guide will be different enough from other planned efforts to still issue it. Circulate next draft before Chicago.</p>	Mills	5
18	Vice-Chair Remarks	Mead	5
19	<p>Miscellaneous</p> <p>– Mike Meteyer idea for a subcommittee/task group for mentoring. Bring in new members and help them join, contribute, and grow.</p>	Lemire	5
20	<p>Closing Remarks</p> <p>– Nic closing remarks, thanks to the TC members.</p>	Lemire	2



June 25, 2023, Tampa, FL

## TC9.6 HEALTHCARE FACILITIES

ENERGY SUBCOMMITTEE (DAVID, OUTGOING CHAIR; JEN, INCOMING CHAIR)

- Goal defining the specific scope of this group (to support, but not duplicate, the efforts of other groups 189.3, decarbonization task force, etc.)
- Recommended technical topics for study:
  - Fan energy; how can the pressure drop in the AHU itself be reduced without too many negative impacts (space, cost, etc.)
  - Reheat energy - How can this be done in an improved way
  - Airside energy recovery - how does this setting impact the strategies
  - Waterside heat recovery - how do you do load matching in an accurate way. Designs are overestimating the needed cooling load and it's not actually base loaded.
    - White paper on this type of system installed in a hospital with actual trend data showing how it has been used.
    - Considerations for 4-pipe vs. 6-pipe heat pumps
    - George Augustini submitted to present on this topic for this conference by hopes to follow up next time with additional requested information to present at next concept.
    - How to handle low grade hot water from heat recovery systems in existing hospitals?
- Decarbonizing Hospital Buildings (due 2024) - this is focused on new hospital buildings only.
  - When the ASHRAE decarbonization task force sunsets, this group will take over that effort. How can the resources become a living document?
- REHVA Hospital design guide
  - [https://www.rehva.eu/fileadmin/user\\_upload/ANNEX\\_5\\_TRC\\_meeting\\_-\\_REHVA\\_Guidebook\\_nZEB\\_Hospital\\_Buildings\\_191104v2.pdf](https://www.rehva.eu/fileadmin/user_upload/ANNEX_5_TRC_meeting_-_REHVA_Guidebook_nZEB_Hospital_Buildings_191104v2.pdf)
- Subcommittee Focus - Energy or. Decarbonization
  - Jen will schedule a subcommittee meeting prior to the winter conference in Chicago to finalize the purpose and scope.
- Gatekeeper of the Information?
  - Decarbonization of Hospitals
  - AEDG for Hospitals
  - 189.3
  - Net Zero Design Guide
  - Hospital Design Guide



# TC 9.6 Healthcare Facilities – Programs Subcommittee

Sunday 06/25/2023, Hybrid

## I. Introductions

## II. TC 9.6 Sponsored Programs/Courses at 2023 Summer Meeting (1)

### Panel 3: Best Practices: Testing, Verifying and Commissioning for Indoor Air Quality and Pathogen Mitigation

Monday, June 26 2:30 PM – 4:00 PM EDT

JW Marriott Tampa Water Street, Tampa Bay 2

Session Type: Panel

Program Level: Intermediate

Program Track: HVAC&R Systems and Equipment

Location: JW Marriott Tampa Water Street, Tampa Bay 2

## III. Other Programs/Courses of Interest at 2023 Summer Meeting (6)

### Designing and Operating High-Performing Healthcare HVAC Systems (code 63)

Sunday, June 25 3:30 PM – 6:30 PM EDT

JW Marriott Tampa - Ybo Salon I/II

Session Type: ALI Course

Location: JW Marriott Tampa

Room: Ybo Salon I/II

### CFD Applications

Monday, June 26 11:00 AM – 12:00 PM EDT

JW Marriott Tampa Water Street, Tampa Bay 9

Session Type: Poster

Program Level: Intermediate

Program Track: Research Summit

Location: JW Marriott Tampa Water Street, Tampa Bay 9

**Effect of Surgical Light Placement and Orientation in Operating Rooms on Aerosol Exposure to Healthcare Workers and Patients (TA-23-C070)**

## Panel 3: Best Practices: Testing, Verifying and Commissioning for Indoor Air Quality and Pathogen Mitigation

Monday, June 26 2:30 PM – 4:00 PM EDT

JW Marriott Tampa Water Street, Tampa Bay 2

Session Type: Panel

Program Level: Intermediate

Program Track: HVAC&R Systems and Equipment

Location: JW Marriott Tampa Water Street, Tampa Bay 2

## Panel 3: Presentation 5: Healthcare Considerations for Building Operation

Monday, June 26 3:50 PM – 4:10 PM EDT

## Seminar 45: The Owner's Perspective: Feedback on Making the Most of Building Automation from Design To Daily Operation

Tuesday, June 27 9:45 AM – 10:45 AM EDT

JW Marriott Tampa Water Street, Tampa Bay 2

Session Type: Seminar

Program Level: Intermediate

Program Track: Building Automation and Control Systems

Location: JW Marriott Tampa Water Street, Tampa Bay 2

## Seminar 45: Presentation 1: Real-World Impacts of ASHRAE Guideline 36 at a Hospital Campus

Tuesday, June 27 9:45 AM – 10:45 AM EDT

## Seminar 55: Effective Ventilation: Pathway to Improved IAQ, Occupant Health and Decarbonization

Wednesday, June 28 8:00 AM – 9:30 AM EDT

JW Marriott Tampa Water Street, Tampa Bay 4

Session Type: Seminar

Program Level: Intermediate

Program Track: Pathways to Net Zero Energy and Decarbonization

Location: JW Marriott Tampa Water Street, Tampa Bay 4

## Seminar 63: Decarbonization Strategies for Health Care Facilities

Wednesday, June 28 9:45 AM – 10:45 AM EDT

JW Marriott Tampa Water Street, Tampa Bay 2

Session Type: Seminar

Program Level: Intermediate

Program Track: Pathways to Net Zero Energy and Decarbonization

Location: JW Marriott Tampa Water Street, Tampa Bay 2

## IV. Chicago, IL 2024 Winter Meeting, January 20 – January 24, 2023

### Overview of Conference Tracks:

 <p data-bbox="280 552 492 615"><b>Fundamentals and Applications</b></p>	<p data-bbox="565 447 1399 615"><b>1.</b> Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, fluid and mass flow. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design elements and shared experiences for theoretical and applied concepts of HVAC&amp;R design are included.</p> <p data-bbox="565 653 1179 678"><b>Track Chair: Craig Bradshaw   <a href="mailto:craig.bradshaw@okstate.edu">craig.bradshaw@okstate.edu</a></b></p>
 <p data-bbox="280 825 492 888"><b>HVAC&amp;R Systems and Equipment</b></p>	<p data-bbox="565 703 1383 842"><b>2.</b> HVAC&amp;R systems and equipment are constantly evolving to address the changing requirements of the built environment. Papers and programs in this track focus on the development of new systems and equipment, improvements to existing systems and equipment and the proper application and operation of systems and equipment.</p> <p data-bbox="565 879 1073 905"><b>Track Chair: Ng Yong Kong   <a href="mailto:nyk@nyk.com.my">nyk@nyk.com.my</a></b></p>
 <p data-bbox="280 1077 492 1140"><b>Refrigeration &amp; Refrigerants</b></p>	<p data-bbox="565 976 1393 1178"><b>3.</b> Refrigeration systems generate and use cold for a range of processes, from food preparation and conservation to vaccine preservation, to long-term protection of fragile ancient inks of historic documents and others. Differences in technologies and equipment, performances, refrigerants, etc., may hide synergies from which both industrial and commercial systems might benefit, also, but not only, from the points of view of reducing direct and indirect GHG emissions.</p> <p data-bbox="565 1215 1076 1241"><b>Track Chair: Atilla Biyikoglu   <a href="mailto:abiyik@gazi.edu.tr">abiyik@gazi.edu.tr</a></b></p>
 <p data-bbox="280 1371 492 1434"><b>Decarbonization &amp; Climate Change</b></p>	<p data-bbox="565 1249 1386 1480"><b>4.</b> Jurisdictions globally are confronting climate change and recognizing that building decarbonization is an important component in their efforts. The worldwide building sector accounts for about 40% of energy-related carbon emissions and buildings remain a major sector that lacks sufficient mitigation policies. As the standards authority for energy usage in buildings, ASHRAE recognizes that our long-standing initiatives in energy efficiency should be expanded to building decarbonization. This track seeks papers and programs that demonstrate the industry's decarbonization efforts.</p> <p data-bbox="565 1518 1073 1543"><b>Track Chair: Som Shrestha   <a href="mailto:shresthass@ornl.gov">shresthass@ornl.gov</a></b></p>
 <p data-bbox="280 1665 451 1728"><b>Hydronic Systems</b></p>	<p data-bbox="565 1564 1393 1627"><b>5.</b> Many different hydronic systems are used in the built environment. This track looks at heating hot water, domestic water, chilled water, condenser water, etc.</p> <p data-bbox="565 1665 1073 1690"><b>Track Chair: Joe Chow   <a href="mailto:joe.ashrae@gmail.com">joe.ashrae@gmail.com</a></b></p>

 <p>Ventilation, Indoor Air Quality and Air Distribution Systems</p>	<p>6. Many different parameters come into play when designing and constructing a finished space. This track looks at how these parameters work with and against each other.</p> <p><b>Track Chair: Ahmed H Abdel Salam   <a href="mailto:ahmed.abdel-salam@usask.ca">ahmed.abdel-salam@usask.ca</a></b></p>
 <p>Comfort, Indoor Environmental Quality and Energy Efficiency</p>	<p>7. ASHRAE Standards 55, 62 and 90 require many things – some of which seem to be in conflict with each other. This track looks at these standards as well as Guideline 10 and their effect on the final project as well as on each other.</p> <p><b>Track Chair: Kristen Cetin   <a href="mailto:cetinkri@msu.edu">cetinkri@msu.edu</a></b></p>
 <p>HVAC&amp;R Controls</p>	<p>8. Determining the best system for a project only goes as far as the control system design that makes all of the elements function together and properly. This track looks at various control strategies and their application within the built environment.</p> <p><b>Track Chair: Alekhya Kaianathbhatta   <a href="mailto:alekhya_k@rogers.com">alekhya_k@rogers.com</a></b></p>
 <p>Project Delivery Methods</p>	<p>9. There are numerous methods for delivering the final project (design-bid-build, design-build, construction manager at risk, indefinite-delivery/indefinite-quantity, etc.). This track looks at the different methods and how they produce the best results for the project delivery.</p> <p><b>Track Chair: Ehab Mamdouh Abu Taleb   <a href="mailto:ehab.mamdouh@ipecc-eg.net">ehab.mamdouh@ipecc-eg.net</a></b></p>
<p><b>In addition to the tracks above, papers and programs that address Cold Climates are appropriate and encouraged.</b></p>	

## Chicago Dates:

- ~~Monday, April 24, 2023~~ | Technical Papers Due
- ~~Wednesday, June 14, 2023~~ | Website Opens for Seminar, Workshop, Forum, Debate and Panel Proposals
- ~~Wednesday, June 28, 2023~~ | CP Abstracts, and Paper Session Requests Due
- **Monday, July 17, 2023** | Conference Paper Abstract Reviews Due
- **Wednesday, July 19, 2023** | Conference Paper Abstract Accept/Reject Notifications
- **Wednesday, August 2, 2023** | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due
- **Monday, October 16, 2023** | Full Conference Papers Due; Request for Conference Paper Sessions Due
- **Wednesday, November 8, 2023** | Conference Paper Accept/Revise/Reject Notifications
- **Friday, November 24, 2023** | Revised Conference Papers Due
- **Wednesday, December 6, 2023** | Conference Paper Final Accept/Reject Notifications

## V. Future Meetings

- Chicago, IL: 2024 Winter Meeting, Jan. 20 – Jun 24
- Indianapolis, IN: 2024 Annual Meeting, June 22 – June 26
- Orlando, FL: 2025 Winter Meeting, Feb. 8 – Feb. 12

## VI. Discussion on Potential Program Topics

- Resources for future meetings:  
<https://www.ashrae.org/conferences/conference-resources/papers-and-programs>
- From Winter Meeting 2022:
  - Infectious Aerosols Position Paper Presentation
    - Walt Vernon indicated that the paper is progressing and may be ready for a presentation, most likely in Atlanta.
  - Decarbonization
    - Walt Vernon indicated that decarbonization is a hot topic for ASHRAE at the moment and that Health Care Facilities impact on the environment and use of energy would be great topics for upcoming seminars and/or papers.
    - Likely best to target Atlanta and/or Tampa due to paper deadline already being past and needing time to gather topics/information.
    - Walt Vernon is leading the MTG on Decarbonization and volunteered to help.
- From Summer Meeting 2022
  - Benchmarking Data
    - A presentation from David Eldridge regarding the benchmarking data their group has collected.
  - Fan Discharge – Pandemic Aerosols
    - Presentation on distribution of viral load from exhaust air sources at healthcare facilities.
  - Pandemic Response
    - Presentation on pandemic responses and approaches to managing transmission.
    - Recommended speakers included Steve Friedman, FGI, Harold Smith
  - Operations and Maintenance of Healthcare Facilities
    - Partner with TC 7.9 in commissioning.
    - Presentation on important factors/considerations regarding maintenance and operations of HC facilities.
    - Amit Bhansali volunteered a potential speaker regarding the commissioning aspects.
  - EUI at design for normal operation vs emergency operation
    - Does emergency operations effect hospital EUI?
    - Dave Thompson, David Eldridge and Walt Vernon have data showing no real increase.
- From Winter Meeting 2023
  - Epidemic Task Force Results suggested by Jen Leach
  - From Energy Subcommittee Meeting
    - Energy Modeling Input Profiles Base On Existing Measured Data
    - Unoccupied Setback Controls
    - Canada vs USA Benchmarking Data
    - Adiabatic Humidification (Ben Russell)
    - Geothermal Hospital Lessons Learned
- Planned presentations for Chicago
  - Paper session on the research project recently completed by Ehsan and Roger CO-P3.

- Panel Discussion on Geothermal Systems at Healthcare Facilities.
  - EUI Data presentation by David Eldridge.
  - 241p as applied in hospitals seminar by ?? Maybe Travis
- Planned presentations for Indianapolis
  - Paper Session on data and results of monitoring by Kurt.



## TC 9.6 Healthcare Facilities – Infectious Diseases Subcommittee

Sunday, 06/25/2023, (Hybrid-Zoom), Tampa Marriott Waterside, Grand Salon E(2)

Zoom URL: <https://mazzetti.zoom.us/j/94296362672%20#success>

Meeting ID: 942 963 62672

2:00 PM - 3:30 PM **Came to order at 2:06**

### I. **ASHRAE CODE OF ETHICS COMMITMENT**

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests.

### II. **ASHRAE DIVERSITY AND INCLUSION COMMITMENT**

ASHRAE is committed to providing a welcoming environment. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of everyone. We proactively pursue and celebrate diverse and inclusive communities understanding that doing so fuels better, more creative, and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all people regardless of age, gender, ethnicity, physical appearance, thought styles, religion, nationality, socioeconomic status, belief systems, sexual orientation or education.

### III. **Introductions:**

- Sign-in ( <https://form.jotform.com/231753647820156> )  
**See jotform for final numbers. 34 in room, 25 online, 9 overlap so approx.. 50 total}**

### IV. **Discussion:**

- Future subcommittee leadership changes (new lead: Dylan Neu 06/29/23)
- ETF & 9.6 and role in ID Sub for addressing handoff of tasks?  
**Bill Bahnfleth is finalizing the ETF handoff report now. expect to see something soon and will identify TC Main vs Subcommittee tasks once that is complete**
- ASHRAE 241P – current status & discussion (**Bill B presentation to occur at main meeting**)
  - i. Ken: **ASHRAE 241P response followed specific request from WH to develop an infectious aerosol indoor air standard and under very rushed timeline. ASHRAE 241 is result of that effort. Due to difficult scope and timeline, we may have to consider it similar to how congress evaluates bills, “now that it has passed, we can figure out what’s in it.**
  - ii. Travis English: **(Chair of healthcare subcommittee w/in 241P) 241 now final committee vote occurred about two weeks ago and was approved for publication by ASHRAE Standards committee. It passed and has been accepted by ashrae so it is now final. Although work will continue to evaluate and ID issues re: implementation and the 241 committee will continue to meet (perhaps after taking a well-earned break).**

## V. Discussion: Updates to CDC Building Ventilation Guidance (Mead)

{Ken provided overview of two CDC Ventilation Guidance documents (1) Updated version of the existing [Ventilation in Buildings | CDC](#) guidance document and (2) A companion 2-page plain language document entitled [Improving Ventilation In Buildings | CDC](#). Ken also provided overview of CDC guidance on emerging technologies (See FAQ #8 at [Ventilation in Buildings | CDC](#)). This was an intentional setup for the upcoming presentation by Dr. Katherine Ratliff of the U.S. EPA.

## VI. Presentation: Katherine Ratliff, Ph.D., Center for Environmental Solutions and Emergency Response, Office of Research and Development, U.S. Environmental Protection Agency, *EPA ORD's Research to Evaluate Air Cleaning and Treatment Technologies*

- {Dr. Ratliff gave an excellent presentation that highlighted recent EPA/ORD testing of some emerging technologies (bipolar ionization, Far-UV) as well as portable HEPA air cleaners. Big take home messages: (1) Comparing results from technology tests to time-matched control tests is critical for calculating efficacy (up to 99.9% reduction in virus over test period without technology active). (2) Replicate tests for each condition necessary for characterizing efficacy. (3) Changing aerosolization media can have a significant impact on efficacy. (4) Portable HEPA unit most effective under these test conditions.}

## VII. ID Sub Focus Discussion:

- What would members like to see the ID sub focus on?
- Which activities have worked best?
- Which are less helpful?
- Should the ID sub have additional topical focus groups?
- Note that we skipped ID in the news this time around. Is that a good/bad/indifferent decision? **Sentiment to keep**
- From Atlanta open mic: "IAQ/IEQ is not appropriate term for air that's free on infectious aerosols. We need a new term to describe air that is not compatible with disease transmission." – any new thoughts on this?
- Push against ACH approach – Relies on assumption that supply air delivered into occupied BZs and contaminants how will facility engineers validate airflow delivery into occupied zones?

## VIII. Open mic:

- Roger L – encouraged ID Sub to think about what we do not know. What nasty bugs are coming. What research can be completed now to support implementation of risk reduction implementations

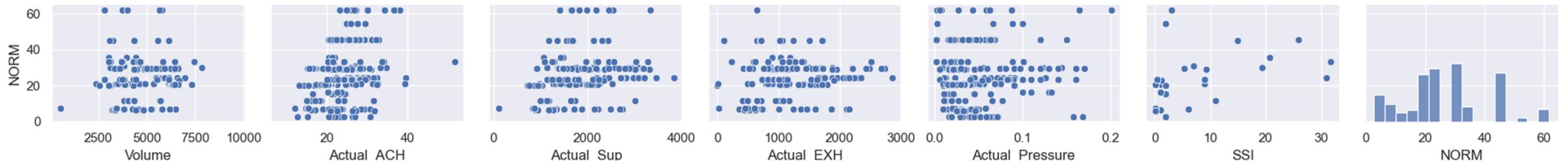
Meeting adjourned at 3:29

# TC9.6 Research Subcommittee Report

- Subcommittee met June 25, 1230pm PT
- Approximately 30 attendees in person and virtually
- Highlights –
  - CO-RP3 breakout – SSI vs ACH
  - Two ongoing sponsored/co-sponsored research projects
  - Three sponsored/co-sponsor work statements approved for bid
  - Three sponsored/co-sponsored work statements underway
  - Four potential sponsored RTAR in development
  - Zero PTAR in development
  - Ongoing prioritization with SSPC170

# Research Development - Other

- Big Data Operating Room Air Change Analysis
  - Ehsan/Kevin/Fred: CO-RP3 breakout. Utilize primarily public SSI data and annual TAB. Preliminary results presented.
  - 400 operating rooms, 29 hospitals, 3 states
  - Next steps – conclude Pilot phase, soliciting funding



# Research

- TC9.6 Co-sponsor - 1780 RP: Test method to evaluate cross-contamination of gaseous contaminant within total energy recovery wheels.
  - Brendon: Accepted by PMS, heading to TC9.10 next
- TC9.6 Sponsor - RP-1816: Reporting the Energy Use and Heat Gain from Imaging Equipment
  - Oscar: Underway, coordinating with hospitals and manufacturers to complete data acquisition
- TC9.6 Sponsor - 1889 TRP: Graywater use in Healthcare Facilities; determining risk and appropriate design responses
  - Eric/Erica/Tyler: Ready for bid
- TC9.6 Co-sponsor with TC2.9 - 1873 TRP: UVGI Design Applications for Large Volume Spaces
  - Ken/Dylan: Approved for bid, zero bids received, re-grouping; RAC increased authority to \$350k from \$250k
- TC9.6 Sponsor - 1864 TRP: Investigating the applicability of Standard 62.1's Ventilation Rate Procedure for Healthcare Rooms
  - Ken: Submitted to RAC; accepted with comments, ready for bid

# Research Development - WS

- TC9.6 Co-sponsor with TC2.9 – 1928 WS: Air Cleaner Efficiency in Combination Chamber Duct System
  - Ken: RAC provided comments which 2.9 addressed; 9.6 re-voted to co-sponsor
- TC9.6 Co-sponsor with ACR MTG - 1936 WS: Air Change Rate Impact on Ventilation Effectiveness
  - Kishor: Price Industries agreed to co-fund, development underway, working with Price on update
- TC9.6 Co-sponsor with TC2.1 – 1931 RTAR: Determination of the Metabolic Rates and CO<sub>2</sub> and Aerosol Generation of Occupants in Modern Offices, Medical Settings, and Commercial Kitchens
  - Mike: Underway, trying to finalize medical portion

# Research Development - RTAR

- 1955 RTAR: Anteroom ventilation rate, temperature range, pressure relationship, and boundary conditions
  - Ted/Ehsan/Erick: RAC approved with comments, team addressing comments
- XXXX RTAR: Understanding the appropriate application of humidity and temperature control strategies across climate zones on infectious aerosol transmission
  - Jonathan/Alejandro/Duncan/Traci/Brendon: Awaiting 170 workgroup
- XXXX RTAR: Patient bathroom ventilation design
  - Ken/Travis/Larry: Rough draft of RTAR started, Lead Required –
- XXXX RTAR: Risks Associated with different medical practices (clinic, MOB, hospital)
  - Michael/Kurt:

# Research Development - PTAR

- TC9.6 Co-sponsor with TC3.6 - PTAR: Publication - Guidelines for State Codes on Secondary Water Treatment Systems for Buildings
  - Erica/Tyler/Eric: RAC rejected, re-write 9.6 voting failed

Thanks