

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.**

**1791 Tullie Circle, N.E./Atlanta, GA 30329**

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**TC/TG/MTG/TRG MINUTES COVER SHEET**

**(Minutes of all Meetings are to be distributed to all persons listed below within 60  
days following the meeting.)**

TC/TG/MTG/TRG

No.

TC2.09

DATE:

February 10th, 2025

TC/TG/MTG/TRG

TITLE:

Ultraviolet Air and Surface Treatment

DATE OF

MEETING:

February 10th, 2025

LOCATION:

Orlando / Virtual

Name	Affiliation	TC Position	Voting Status	Appointed	End Year
Sam Guzman	American Ultraviolet	Chair	VM	7/1/2024	6/30/2026
Aaron Engel	Fresh-Aire UV	Vice Chair	VM	7/1/2024	6/30/2028
Derek Sears	Lumalier Ultraviolet	Secretary	VM	7/1/2024	6/30/2028
Larry Fletcher	RGF Environmental	Standards SC Chair	VM	7/1/2022	6/30/2025
Scott Sherwood	Eco Care Corporation	Program SC Chair	VM	7/1/2021	6/30/2025
Robert Coleman	Trane Technologies	Webmaster	VM	7/1/2022	6/30/2026
Carl Bloomfield	Intertek Testing Services	Member	VM	7/1/2023	6/30/2027
Richard Lee Vincent	Mount Sinai	Research SC Chair	VM	7/1/2023	6/30/2027
Kevin Kwong	LMS Technologies	Member	VM	7/1/2022	6/30/2026
Steve Welty	Green Clean Air	Member	VM	7/1/2021	6/30/2025
Stephen Martin	CDC/NIOSH	Membership SC Chair	NVM	N/A	N/A
Richard Vincent	Mount Sinai Hospital	Research SC Chair	NVM	N/A	N/A
Ashley Shipley	Lumalier Ultraviolet	Handbook SC Chair	NVM	N/A	N/A

## DISTRIBUTION

<b><i>All Members of TC/TG/MTG/TRG plus the following:</i></b>	
TAC Section Head:	Diana Fisler
TAC Chair:	Craig Messmer
All Committee Liaisons as Shown On TC/TG/MTG/TRG Rosters:	Steve Hammerling (Staff Liaison) Chris Gray (Research Liaison) William Walter (Standards Liaison)
Manager Of Standards  Manager Of Research & Technical Services	

### **ASHRAE Technical Committee 2.9 (TC 2.9)**

#### **Ultraviolet Air and Surface Treatment**

#### **Main Committee Meeting Minutes**

**Orlando & virtual February 10<sup>th</sup>, 2025**

**Monday, February 10<sup>th</sup>, 2025, at 10:00 AM – 12:00 PM EST**

**These DRAFT Meeting Minutes have not been approved and are not the official record until approved by the Technical Committee at the Summer 2025 meeting**

“TC 2.9 Scope – TC 2.9 is concerned with all aspects of equipment and systems that utilize ultraviolet radiation to destroy or de-activate chemical and/or biological air and surface contaminants in HVAC systems and indoor spaces, including, but not limited to, effectiveness, safety, maintenance, and economics.”

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### **Review code of ethics / ASHRAE Diversity Commitment.**

- Sign-in sheet distributed in person and on-line. Identify if attendees is a YEA (under 35 yrs.) or "International" member.
- New artificial intelligence policy has been added. Review new AI policy.
- Role-call / Quorum: Aaron Engel / Larry Fletcher / Scott Sherwood / Robert Coleman / Kevin Kwong / Steve Welty / Sam Guzman / Carl Bloomfield (A) / Richard Vincent / Derrick Sears
- (9 out of 10 voting members present we have Quorum
- Meeting came to order at 10:00 am EST
- Approved Draft Minutes from ASHRAE 2024 Summer Meeting (Indianapolis)

Sam Guzman, TC2.9 Chair opened the meeting

Motion was made to approve the draft minutes from Indianapolis (9) voting members Present:  
Approved/passed

Section head addresses the TC.

Diane had a conflict during our Main meeting, she stopped by the Saturday afternoon meeting to introduce herself. Gave a reminder activity form is due for TAC meeting, confirm correct scope/minutes/agenda is updated. Address any difficulties or accomplishments with Section Head. Review web page making sure it's updated and correct. The reason why we ask YEA to identify themselves is so they can get more involved with the committee and the society.

### **Update from TC chairs breakfast:**

- TAC – update they have a YEA Leadership program – link on website- younger members looking for an ASHRAE mentor to learn how to take part and contribute. Looking to automate the activity forms, updated strategic plan now available
- Center of excellence for Building Decarbonization – (4) courses they can present for local chapters, The is a new certification "Certified Decarbonization Professional"- Publications on Decarb and Training offered.
- Currently they have 23 projects going, they handle special projects outside of ASHRAE's research activities
- Conferences and Expo Committee – CEC-Orlando 198 programs submitted / (75) accepted, (113) total with paper sessions, (9) Panel (3), (18) Forum (3), (158) Seminars (63), (10) Workshops (4), (3) Debate (2). Phoenix next stop (June 21-25), program submission due February 26. Program Chairs training February 11<sup>th</sup> here.
- Government Affairs Department- Educating law makers with ASHRAE SMEs. IAQ in schools is a big topic that they recently were involved with.
- Publications committee- Authoring tools on their website, P-Tars, special publications.
- ASHRAE Fellows – Deadline for nominees is May 1<sup>st</sup> 2025- There are (2) new ASHRAE fellows that are part of TC 2.9.
- New Roster update is done online – Ours has been submitted but we are going to double check for accuracy.

## **Sub-committee Reports:**

### **Website report: Bob Coleman**

There have been updates to the website and we can add links to publications. Looking to add UV basics PowerPoint

### **Research sub-committee: Richard Vincent**

ASHRAE has money and no RTARs currently.

**RP 1854:** UVC K-values – completed, available soon, conference paper will be presented, and/or report publication coming soon.

***Recommendations are to have a standing WG to study k values for microorganisms of interest under select criteria to have this database current and to have a section in the handbook to be updated on a regular basis***

**WS 1928:** Air Cleaner Efficiency in Combination Chamber Duct System- Granted to LMS/Owen Consulting Kevin K. PI / Kathleen O. PI 1st phase done looking at mixing and moving supply and return ducting.

**WS 1873:** Upper-Air Ultraviolet Germicidal Irradiation (UVGI) for Tall Spaces – Out for bid - This will help to validate GPC-37 for ceilings above 10ft, Air Care in MN may have “high ceiling” chamber.

### **New Topics:**

- RTAR on 185.1 round robin- Steve Martin, Carl Bloomfield, Derrick Sears - 185.1 to change the challenges to include MS2- vote expected this week. Potential co-sponsors- 9.6, 241
- RTAR for 185.3 round robin- w/focus on MS2 Larry Fletcher, Hank Greist, Katherine Ratliff, Jesse (??). Question of which technologies to test? Potential co-sponsors- 9.6, 241, 2.4
- Work on a guideline for standardizing reporting/studying UV effectiveness at different wavelengths based on knowledge gaps identified by RP-1854 Richard Vincent, Steve Martin, IUVA, Chip Blatchley, Lexuan Zhong, Vivian Belenky, Katherine Ratliff, Katja Auer. This group will work on TPS and submit it to 185.
- Explore what other mechanisms are available to put together a short guideline. Does it fall under Standards or Guideline project committee. This would be a Meta analysis for “k” values with the RTAR based on recommendations from 1854. Potential co-sponsor / funder - IUVA TRAST WG
- RTAR to understand decay versus continuous challenge test methodologies on efficacy for in room fixtures – Need to follow studies conducted by NIOSH and Safe Traces to determine scope of further research. - Champion Phil, Kathryn, Janet Price, Tom Dunbar Deadline Aug 15, 2025 - Potential co-sponsors- 9.6, 241, SSPC 185.3.
- RTAR- to understand the variances between microbial preparation methods and other variables in the determination inactivation rate constants. - We need users of the output/reports to understand the variability between labs and present the “uncertainty” in results. There will be within-lab uncertainty and between-lab uncertainty.
- Review of the studies related to exposure limits for UV-C wavelengths. What studies are underway in the biomedical area which could aid relaxation of the ACGIH limits? – Champion - David Sliney
- RTAR to study the threshold for population inversion for DNA/RNA damage compared to a laser beam using pulsed UVC LEDS- Tom Dunbar will work with Richard V. to submit RTAR

- PTAR – Richard will look at the available mechanisms for a research gaps paper. What parameters influence the outcome (eACH or other value), the magnitude of impact of those parameters, intra-lab uncertainty, inter-lab parameters, and interpretation/application of output Paul Jensen, Joy Dunkers, Larry Fletcher, Hank Greist, Vivian Belenky, David Sliney

**Standards sub-committee: Larry Fletcher**

**SSPC185 Updates (February 8, 2025)**

- **SPC 185.1:** An addendum was developed for MS2 testing to align with ASHRAE Standard 241. The addendum was approved by letter ballot (8-0-0-0-1) and is pending final submission to ASHRAE.
- **SPC 185.2:** Members reviewed the current standard and recommended revisions. Next step: Schedule Webex meetings to discuss revisions with SSPC185 members.
- **SPC 185.3:** Standard requires updates to align with ASHRAE Standard 241. Next step: Webex meetings scheduled for final committee review and comments. Voted on February 8, 2025, to update this standard, ensuring alignment with new ventilation guidelines and address unanswered comments.
- **SPC 185.4:** In continuous maintenance.
- **SPC 185.5:** Draft to be released for public review prior to summer meeting in Phoenix

**Project Committees**

**GPC-37-Upper Room UVC: Richard Vincent, Chair**

- Ashiah and Paul added information illustrating how the guideline and 241 are used together
- Targeting Summer meeting for public review draft

**Programs sub-committee: Scott Sherwood**

- Programs for Orlando Winter 2025 Conference (1) submitted, (0) Accepted
- Submitting (2) Program Submissions for Phoenix Summer 2025 Conference (Due February 26 2025)
- 1.) Emerging Air Purification Technologies – Part 2
- Moderator: Scott Sherwood – EcoCare Corporation
- Upper Air UVC – Bill Palmer – Aria UV
- Far UVC – Janet Price – Lit Thinking
- Oxidative Technologies – Marlon Robinson – CerroZone
- Enhancing Air Sanitization Through Directed - Airflow in Healthcare Environments – Tom Dunbar

**Possible tracks for winter 2026**

In-room UVC applications for infection control.  
Upper Room UVGI performance and DOE research.  
Monitoring UV-C system performance  
How safe is my UVC?  
Monitoring: How do I know my UVC is working properly?

**Handbook Subcommittee: Ashley Shipley**

- 2027 Handbook review underway.
- Proposal: Regular updates on UV inactivation rate constants based on RP-1854 findings.

**Membership: Steve Martin – Not present**

- Updated roster and voting terms
- Currently 10 voting members
- Currently 152 corresponding members as per ASHRAE - HQ

### **Outreach and Communications: Aaron Engel**

- TC 2.09 has an official ASHRAE LinkedIn page, all TC members should follow
- Aaron created a QR code and that will be added to the TC 2.09 webpage
- Members of IUVA, IES, and other industry groups are encouraged to share details and QR code

### **Reports from TC Liaisons**

#### **SSPC 62.1 - *Ventilation for Acceptable Indoor Air Quality*, Brian Hafendorfer**

TC 2.9 submitted suggested verbiage for the 5.9.2 section –They decided to wait for more testing from PNNL work ~ May/June. Continuous maintenance proposal to add eACH calcs to 62.1

#### **SSPC 62.2 - *Ventilation and Acceptable Indoor Air Quality in Residential Buildings*, Henry Greist**

Updated MERV level to 11 still considering 13.

#### **SSPC 145 Kevin Kwong**

**SSPC 145.1** *Test Method for Assessing the Performance of Gas-Phase Air Cleaning Equipment*,  
Republished in 2024 no updates

**SSPC 145.2** Recently republished after heavy revisions to the test standard to incorporate electronic air cleaners

**SSPC 145.4** Just went out for PPR

**SSPC 161 - *Air Quality Within Commercial Aircraft*, Aaron Engel** –Aaron will not be attending this SSPC anymore “not well organized”

**TC 2.3 - *Gaseous Air Contaminants and Gas Contaminant Removal Equipment*, Kevin Kwong** Updated roster

**TC 2.4, *Particulate Air Contaminants and Particulate Contaminant Removal Equipment*, Kevin Kwong**  
Update - status quo, talking about revision to the MERV rating system.

### **Reports from Other Liaisons:**

**IUVA – Troy Cowan** IUVA will hold a meeting - March 18, 19, & 20 2025 Workshop at The American Geophysical Union Conf. Center, downtown DC – Next call: February 20<sup>th</sup> Barry Hunt will speak to UV-C in Canada – Standards moving forward

**UL Standards - UL-1995 / UL 60335-2-40/ US 8802/UL 8803 Mike O’Boyle**

**US TAG for ISO/TC 142 - Working Group II-Katja Auer - 15714** -Working group of US representatives working to review standard. **David Sliney** added that the current President is looking to apply European standard Internationally, David would rather refer them to local, regional, country specific regs.

**NEMA - Michael O’Boyle** - American National Standards... C137.2 describes what manufacturers need to have available to consumer, how it is presented, and whether it is mandatory or optional. NIST, PNNL, IES, review copy may be available by summer, with ANSI public review copy targeted for end of the year.

**NALMCO – Erik Ennen**- Cert and training efforts going well. No dates for the next set of classes but should be available soon.

## **New Business**

- **Stephen Martin** and **Josephine Lau** have been awarded ASHRAE Fellow status. Congratulations!
- Frank Mills gave a quick report about work he is doing at a UK Hospital to show major benefits using ceiling recessed UV and filter air cleaners in patient wards.
- He also shared a new report with the TC which was published in Elsevier and voiced his displeasure with the results and testing procedures:  
[Air filtration systems do not reduce the risk of picking up viral infections | NIHR](#)
- Research Priorities: Addressing data variability in microbial inactivation testing.
- Collaboration Opportunities: Exploring partnerships with NIOSH, EPA, and Safe Traces.
- 20-Year Anniversary of TC 2.9: Plans for social media promotion.

**Motion to adjourn by Sam Guzman. Meeting was adjourned at 12PM EST**