

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

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

404-636-8400

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.

TC02.09

DATE:

June 16, 2021

TC/TG/MTG/TRG

TITLE:

Ultraviolet Air and Surface Treatment

DATE OF

MEETING:

Wednesday, June 16, 2021

LOCATION:

Virtual

Name	Affiliation	TC Position	Voting Status	Appointed	End Year
Aaron Engel	Fresh-Aire UV	Program SC Chair	VM	7/1/2020	6/30/2022
Jaak Geboers	Signify Lighting BV	Standards SC Chair	NVM		
Sam Guzman	American Ultraviolet	Secretary	VM	7/1/2020	6/30/2022
Henry Greist	Lennox Industries	Chair	VM	7/1/2020	6/30/2022
Brian Hafendorfer	Gray Architects and Engineers		VM	7/1/2018	6/30/2021
Richard Vincent	Mount Sinai Hospital	Research SC Chair	VM	7/1/2020	6/30/2022
Ashish Mathur	UVDI	Vice Chair	VM	7/1/2018	6/30/2021
Stephen Martin	CDC/NIOSH	Membership SC Chair	NVM		
Kathleen Owen	Owen Air Filtration Consulting	Member	VM	7/1/2018	6/30/2022
Dean Saputa	UV Resources	Handbook SC Chair	NVM		

DISTRIBUTION

<i>All Members of TC/TG/MTG/TRG plus the following:</i>	
TAC Section Head:	Jon Cohen
TAC Chair:	Dustin Meredith
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Theresa Weston, <i>Standard Liaison</i> Steven Hammerling, <i>Staff Liaison</i>
Manager Of Standards Manager Of Research & Technical Services	William Hutzal

ASHRAE Technical Committee 2.9 (TC 2.9)

Ultraviolet Air and Surface Treatment

Main Committee Meeting Minutes

MEETING AGENDA

Virtual June-16-2021

Wednesday June 16, 2021 at 10:00am - 12:00 noon

These DRAFT Meeting Minutes have not been approved and are not the official record until approved by the Technical Committee at the Winter 2022 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.”

©2019 ASHRAE. All rights reserved. This is a draft document for review only by the cognizant ASHRAE groups and other designated reviewers and is not intended for distribution to any private interests, individuals, or third parties that are not designated as ASHRAE reviewers for this document. This document may not be distributed in whole or part in either paper or in digital form without the express permission of the chair of the committee originating this document.

The appearance of any technical data or editorial material in this draft document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, design, or the like, and ASHRAE expressly disclaims same.

Meeting came to order at 10:04 am

Henry Greist, TC2.09 Chair opened the meeting

Voting members Present:

Aaron Engle	Richard Vincent
Brian Hafendorfer	Kathleen Owen
Sam Guzman	Henry Greist
Ashish Mathur	

Roll Call of Voting Members: 7 of 7 present (quorum is met)

Introductions – Name and affiliation of participants

Review Agenda: All in favor

Review of Draft Minutes from 2021 Winter Meeting, Virtual Conference

Motion to approve the 2021 Summer meeting minutes by Richard Vincent, 2nd by Kathleen Owen

Date	Topic	Motion	Vote					
			F	Ag	Ab	NV	CV	
6/16/21	<i>Approve the 2021 Summer meeting agenda.</i>	Approve Summer 2021 TC 2.9 agenda	7	0	0	0	Y	PASS

ASHRAE Liaison Report: No update (Liaison not present)

Summary of (2) votes that took place in between meetings:

Date	Topic	Motion	Vote					
			F	Ag	Ab	NV	CV	
2/24/21	<i>Method of testing in-room devices and systems for microorganism removal or inactivation in a chamber.</i>	Approve Title, Purpose & Scope (TPS)	7	0	0	0	Y	PASS
4/7/21	<i>Improving test methods to measure air cleaner performance against airborne pathogens</i>	Approve RTAR	7	0	0	0	Y	PASS

Review Action Items from TC Chair breakfast

- Research funding constraint due to decreased ASHRAE revenue; however, TC2.09 encouraged to submit research proposals. Proposals will be “in cue” and ASHRAE committed to fund already approved projects.
- ASHRAE is trying to eliminate “silos” encouraging TCs to cross pollinate and to have more visibility.

Subcommittee Reports

Research Subcommittee: Richard Vincent, Chair

Currently ASHRAE does not have the funding for projects; however, still encourages submittal of proposals.

TC2.3 open request for co-sponsoring RTAR “Effects of increased use of surface disinfectants and hand sanitizers on indoor air quality”;

There is general interest for this RTAR and general consensus among the voting members; virtual letter ballot will be emailed out to record votes.

Project Committees:

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

Bi-weekly meetings, 40-50 people are attending the sessions on average. Following the flow chart and making progress. The committee has prepared a draft response to UL-8802 and this will be discussed in new business. Next GPC-37 meeting is 6/25/21. Thank you to all involved, special thank you to Mr. Vincent for all of his efforts.

SSPC-185 - Methods of test to Inactivate Microorganisms - Steve Martin, Chair

Currently (2) published standards that were republished in 2020. Looking at suggested edits for 185.2. Next 185 meeting is 6/23/21

A new SPC 185.3 - Method of Testing In-Room Devices and Systems for Microorganism Removal or Inactivation in a Chamber – Linda Lee, Chair*

Is currently listed as provisional SPC for now. All interested parties must request to join the SPC via the web-site. The official roster and cabinet positions will be voted on when the group holds the first official meeting.

A new SPC185.4 - Method of Testing In-Room Ultraviolet Devices and Systems for Microbial Inactivation On Surfaces in a Test Room – TBD, Chair

The Title, Purpose, and scope have been prepared for submission and shared with the TC. This will be brought up during new business.

There was discussion regarding the possibility of initiating another SPC. Potentially 185.5. At present the focus would be a method of test for in-duct air cleaners without a single pass test. The thought being that this testing method would be able to be used for devices and fixtures incorporating reactive air technologies.

Standards Subcommittee: Jaak Geboers, Chair

- All of the standards are currently up to date
- Dr. Lee spoke briefly regarding SPC185.3 and invited the audience to join

Programs Subcommittee: Aaron Engel, Chair

We have had several submissions selected for presentation over the last few meetings!! Great job Aaron and everyone that helped!

Seminars accepted –

#64 Choosing The Right UV Strategy For Your Application

Richard Vincent, Brian Hafendorfer, Katja Auer, Ashish Mathur, William Bahnfleth

Available on demand during the summer meeting

Seminars proposed to be submitted:

UV Wavelengths and LEDs – Not all UV wavelengths are the same. There are various wavelengths of UV light that can prove beneficial for some applications and may pose issues for others. This seminar will discuss the various UV wavelengths that can be used for buildings and facilities and when to choose one wavelength over another for the desired results – Aaron Engel, Ashish Mathur

UVC Experience and how to apply UVC - This session would discuss: An explanation of UV dose, application information, what we know and do not know, and chemicals vs. UV – Linda Lee, Katja Auer, Aaron Engel, Sam Guzman

Reactivate Air Cleaners 101- This session would discuss the mechanisms by which reactive air cleaners function as disinfection systems and would cover the basics of the various reactive air technologies. Kathleen Owen, Dean Thompkins

Discussion ensued regarding a whole room disinfection seminar proposal for 2022.

Handbook Subcommittee: Dean Saputa, incoming Chair

- The 2023 printed updates are due 8/22
- Currently the handbook committee is working on electronic updates
- Current updates include new or expanded information on: 207nm, 365nm, 405nm, PCO, Pulsed UV systems, dosimeters, stand-alone air disinfection units, ACH, and UVC upper air information
- Committee meets every 3 weeks
- There is a change to the log in information for the June 21st meeting

Membership Subcommittee: Steve Martin, Chair

- 33 attendees at today's meeting
- Average of 20-25 people in sub-committee meetings
- Currently there are 7 voting members 2 voting members will roll off as of 6/30/21
- 5 new voting members will come on after 6/30/21 for a total of 10
- 2 non-quorum voting member will also be added

TC web-site: Bob Coleman, Webmaster

Updates are good. A question came up regarding when to use Basecamp or the Web-site. Website is for public, Basecamp for all internal documents

Reports from Liaisons**SSPC 62.1, *Ventilation for Acceptable Indoor Air Quality*, Brian Hafendorfer**

Revising IAQ guideline 42-B – It is going out for public review

Does not contain information on equivalent UVC air changes

June 24th next full committee meeting

SSPC 62.2, *Ventilation and Acceptable IAQ in Residential Buildings*, Henry Greist

No major changes

June 23rd next meeting

SSPC 145, *Test Method for Assessing the Performance of Gas-Phase Air Cleaning Equipment*, Matt Middlebrooks

The group is revising the TPS for 145.2 to include testing and by product information. They have a current research project looking at ozone removal with 2 UVC / PCO devices

Seminar 14 - Tuesday, June 29, 7:00 PM - 8:30 PM

SSPC 161, *Air Quality Within Commercial Aircraft*, Aaron Engel

Nothing to report meeting scheduled for end of the week

Next meeting Friday, June 18 11:00 AM – 2:00 PM EDT

TC2.3, *Gaseous Air Contaminants and Gas Contaminant Removal Equipment*, Matt Middlebrooks

The group met last Friday, looking at test methods and developing educational materials, courses etc.

TC2.4, *Particulate Air Contaminants and Particulate Contaminant Removal Equipment*, Kathleen Owen

The 52.2 committee voted to include an optional appendix to test for bio-aerosols for non-UV equipment. This is going out for public review soon

TC 9.6, *Healthcare Facilities*, Katja Auer

Some membership overlaps which is great, works with ASHRAEs goal of not having silos. Biggest take away Ken Meade advertised joining 185.3 to the 9.6 main meeting

Henry Greist (Chair) asked about adding other liaisons to other groups.

- EHC
- TRG4.IAQ
- MTG.HWBE
- AHRI – **Julie Majurin** - The AHRI group has a post pandemic working group

- IES – There is an MOU in place **Richard Vincent** and **Dean Saputa** are on the Photobiology committee
- NEMA – **Jeremy Yon, Michael O’Boyle**

No volunteers or appointments were made

ASHRAE Staff and Liaison Reports:

Handbook liaison – Harris (?)

The deadline for the print submission is 10/31/21 TC 2.9 is ahead of the game.

We are currently doing out of cycle updates.

Harris is not shown on the TC roster but he does get emails

He is shown as a provisional member on the Chair’s roster

UL-1995 / UL 60335-2-40 update, Brian Rogers

- 2-40 is going out for public review comments are open

US TAG for ISO/TC 142 Update, Dean Saputa

Katja Auer was added to the expert panel

IUVA, Sam Guzman / Ashish Mathur

An MOU has been signed and is in place. A short list of 7-8 primary areas of collaboration was developed. We are currently looking at SPC185.4 as the first opportunity to work with the IUVA membership. A small group was put together to develop the TPS and this will be voted on during the new business section. We are encouraging ASHRAE members to get involved with the IUVA and visa versa.

Old Business

- IUVA / ASHRAE: MOU completed

New Business

UL8802 Proposal Review, Michael O’Boyle

Mr. O’Boyle shared the proposed edits for the UL 8802 proposal.

After the language was read and discussion was had Richard Vincent made a motion for a vote, Ashish Mathur provided the 2nd

Date	Topic	Motion	Vote					
			F	Ag	Ab	NV	CV	
6/16/21	<i>Approve the UL8802 proposed edits</i>	Approve edits as written	6	0	1*	0	Y	PASS

* The Chair abstained from the vote

SSPC185.4 Title, Purpose, and Scope: Ashish Mathur

A small group put together a TPS for the proposed SPC185.4 committee. The TPS information was circulated and discussion was shared. Motion to approve the TPS for 185.4 by Kathleen Owen, 2nd by Brian Hafendorfer

Date	Topic	Motion	Vote					
			F	Ag	Ab	NV	CV	
6/16/21	Draft TPS for 185.4.	Approve draft TPS 185.4	7	0	0	7	Y	PASS

* One VM had to leave before this vote was taken.

Motion to adjourn meeting by Aaron and the 2nd was made by Kathleen.

Meeting was adjourned at 12:10pm

Meeting Attendees:

VM- Voting Member

CM- Corresponding Member

PCM- Provisional Corresponding Member

First Name	Last Name	Affiliation & Position	E-mail Address
Katja	Auer	American UV, CM	KatjaDorisAuer@yahoo.com
Robert	Coleman	Trane Technologies, Webmaster, CM	bobcolem@gmail.com
Joel	Davis	AAF/Flanders, Guest	joel.davis@aafintl.com
Aaron	Engel	Fresh-Aire UV, Program Subcommittee Chair, VM	aaron@freshaireuv.com
Larry	Fletcher	RGF Environmental, PCM	lfletcher@rgf.com
Jaak	Geboers	Signify, Standards Subcommittee Chair, CM	jaak.geboers@signify.com
Henry	Greist	Lennox Industries, Chair, VM	henry.greist@lennoxind.com
Sam	Guzman	American UV, Secretary, VM	sguzman@auvco.com
Brian	Hafendorfer	Gray Architects & Engineers, VM	bhafendorfer@gmail.com
Kevin	Kwong	LMS Technologies, PCM, YEA	kevin@lmstechnology.com
Josephine	Lau	University of Nebraska, Lincoln, CM	jlau3@unl.edu
Linda	Lee	Linda D Lee Healthcare Consultants, CM	Linda@lindadleehcllc.org
Chang-Seo	Lee	Concordia University, PCM	changseolee@gmail.com
Stephen	Martin	CDC/NIOSH, Membership Subcommittee Chair, CM	smartin1@cdc.gov
Ashish	Mathur	UVDI, Vice Chair, VM	ashish.mathur@uvdi.com
Matt	Middlebrooks	Middlebrooks Technical Services, CM	MiddlebrooksTS@gmail.com
Kathleen	Owen	Owen Air Filtration Consulting, VM	kathleenowen@att.net
Brian	Rodgers	UL, CM	brian.rodgers@ul.com
Dean	Saputa	UV Resources, Handbook Subcommittee Chair, CM	dean.saputa@uvresources.com
Alain	Trahan	H2O Biotech, PCM	atrahan@h2obiotech.com
Richard	Vincent	Mount Sinai, Research Subcommittee Chair, VM	vincentr1777@gmail.com
Michael	Witkowski	Mchugh Engineering, PCM	mwitkowski@mchugheng.com
John	Topmiller	SitelogIQ, PCM	john.topmiller@sitelogiq.com
Jeremy	Yon	GE Current, PCM	jeremy.yon@gecurrent.com
Michael	Halloran	UV Partners, Guest	mhalloran@uvangel.com
Brandon	Melton	Energy Management Collaborative (EMC), PCM	bmelton@emcllc.com

Chrystal	Jolliffe	Carrier, Guest	chrystal.jolliffe@carrier.com
Kishor	Khankari	AnSight, PCM	kishork@ansight.com
Julie	Majurin	AHRI, Guest	jmajurin@ahrinet.org
Al-Nakdaly	Khaldoun	Al Mayssan Technical Services, Guest	nakdaly@almayssan.com
Mike	O'Boyle	Signify, PCM	Mike.oboyle@signify.com
Jim	Bogart	Johnson Controls, Guest	james.eric.bogart@jci.com
Sina	Yousefi	AAF/Flanders, Guest	sina.yousefi@aafintl.com
Charles	Dorgan	University of Wisconsin-Madison, Guest	cedorgan@wisc.edu
Harris	Sheinman	CDC, PCM, Handbook Liaison	lyy9@cdc.gov
Dan	Mason	Bioclamatic, PCM	dmason@bioclimatic.com
Ben	Goemann	EMC, PCM, YEA	bgoemann@emcllc.com
Christian	Taber	Delta T dba Big Ass Fan, PCM	ctaber@bigassfans.com