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

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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: June 24th , 2024

TC/TG/MTG/TRG TITLE: Ultraviolet Air and Surface Treatment

DATE OF MEETING: June 24th, 2024 LOCATION: Indianapolis / Virtual

Name	Affiliation	TC Position	Voting Status	Appointed	End Year

DISTRIBUTION

All Members of TC/TG/MTG/TRG plus the following:	
TAC Section Head:	John Cohen
TAC Chair:	Craig Messmer
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters:	Steve Hammerling (Staff Liaison) William Hutzel (Research Liaison) Gerald Kettler (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

MEETING AGENDA

Indianapolis & virtual June 24th, 2024

Monday, June 24th, 2024, 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 Winter 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."

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 / Matt Middlebrooks / Evan Quon / Steve Welty / Sam Guzman / Carl Bloomfield / Richard Vincent
- We have Quorum
- Meeting came to order at 10:00 am EST
- Approved Draft Minutes from ASHRAE 2024 Winter Meeting (Chicago)

Section head addressees the TC.

Typical activity liaison. Appreciate all the TC does. The roster should be finalized by June 30th for the upcoming year. Confirm a succession is in place. Reminder activity form is due for TAC meeting. confirm correct scope/minutes/agenda is updated. Address any difficulties or accomplishments with Section Head.

Ashish Mathur, TC2.9 Chair opened the meeting

Voting members Present: Approved/passed

Section head update on TC TAC liaison. Succession is in place for TC committee members. 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.

Member Frank Bills member of publications committee: Publications are open and encouraged for TCs to co-sponsor and co-fund with other TCs. There are mechanisms to work with other organizations outside of ASHRAE.

Update from TC chairs breakfast: Small presentation

Small presentation from the code sub-committee (plumbing, heating related).

There's an on-line roster implemented July 1st.

New center for excellence for building decarbonization that has been formed.

GTIC (Global Technical Interactions Committee) interfaces with other standards and organizations (example ISO working groups)

Residential building committee TCs exist, and our focus has been on commercial buildings. We need to consider the residential building as well.

Sub-committee Reports:

Website report: Bob Cole

There have been updates to the website and new guidelines requirements.

We will pay more attention and content directed to outreach. We can't add actual publications, but we can add links to those publications.

Research sub-committee: Richard Vincent

- There seems to be funding available at a high level. There is a push within our committee to develop some RTARs, we just completed one study of a database of UV and inactivation rate constants. We reviewed 350 papers and extracted data points. Reviewed published and peer reviewed papers and were able to find 5-microorganisms where we had significant values we can use incl. influenza, corona virus, E.coli, MS2, and adenovirus. Evaluated under various conditions such as surface, aerosol and various wavelengths (majority being 254 nm with new wavelengths being 222 and 270-275 nm representing new technologies and sources). Made some recommendations in the report on developing a sub-committee to keep track of organisms. We are hoping ASHRAE will provide a letter for review allowing us to continually update the database and future critical analysis and future K-values that can be used for design.

- We also have a project that went out to bid for upper room UVGI application for tall spaces. This came back with no bids. Revising the study requirements as labs were not able to meet test requirements.

- We have a new study underway that went through the RTAR process that went out to bid. RTAR TRP-1928 is moving at a good pace.

- New RTARs that have not passed yet, new RTAR enveloped and un-enveloped virus within the HVAC duct has been admitted into ASHRAE for review.

- Two other RTARs committed to be submitted by August 15th 2024, they relate to the 185 standard and looking at 185.1 and 185.3.

- There is a new mechanism for publishing articles through the ASHRAE process, PTAR. We are trying the PTAR submission process for a risk benefit analysis for far UV and other wavelengths.

- If you have any other ideas, please submit through Ashish or Richard Vincent.

- We do have a new research liaison, Chris Gray

We had Gabe Arnold from Pacific Northwester Labs (PNL) present a seminar on research activities PNL is doing.

- Lead area of research into IAQ technologies. PNL is a DOE national laboratory in collaboration with Lawrence Berckley Laboratory with significant focus on GUV.

- Funding is provided by the DOE lighting program

- At the highest level, we are trying to reduce disease transmission and achieve new targets in the 241 standard and CDC with the 5X e-ach per hour at the lowest energy, carbon and cost.

- The lab uses simulation models, where they look at different scenarios and accessing effectiveness, efficiency, costs for the best solutions. Also review wildfire smoke and how that changes the solution. Conducting field evaluation, visiting 14 GUV installation sites taking measurements and surveying occupants. Understanding how the technology has been deployed, if it's safe and effective and a deeper dive with the GSA where they are running HVAC systems and comparing it to standard 241 and comparing that to HVAC system supplemented with UV and measuring energy. They are also getting more information on the occupant and installation experience.

- Product testing program where they test off-the-shelf products, see how they perform and compare against manufacturer claims. This is not a regulatory program. This is a program where they collaborate with industry and other stakeholders and educate with the goal that the products have accurate performance data that’s needed for scaled deployment. This is a market development program for a technology they are seeing a lot of promise in.

- Reviewed a few simulations via PowerPoint. You can visit the PNL website and review the simulations and strategies. Google: “Department of energy germicidal ultraviolet” for more information. **Aaron Engel (secretary TC 2.9) addition you may find helpful: https://www.energy.gov/sites/default/files/2023-05/bto-peer-2023-32106-guv-disinfection-pnnl-arnold.pdf

Standards sub-committee: Larry Fletcher

- 185.3 is published. 185.4 is close to being published.

- Steve Martin: We made changes to 185.1. In standard 241, 185.1 is listed as a consistent testing method for testing UV systems in the duct work in order to get credit for 241. We have a simple addendum we developed to explain the 185.1 standard can be used for 241 and added a new appendix to allow for an optional test under the guise of 241 against MS2 only. There has been discussion re: changing test organisms but have decided not to change it currently. We just wanted to update the language to reflect that its 241 compliant. Vote and submittal pending. 185.3 may also be included in the 241 standards (Appendix A)

- 185.5: Katja Ajuer working on sections reviewing getting ready for public review supporting Kathleen Owen. Draft looks promising.

- 185.4 has passed public review and is in the release process.

- Steve Martin is moving on as SSP 185 chair. After 11 years of leading this effort Katja will be taking over. Great job Steve a huge recognition!

- A new whole room surface disinfection performance standard which has come out from the Health Care Standards Institute focusing on healthcare applications simulating healthcare environments.

- During the sub-committee we discussed possible test method measuring inactivation rate constants. There is a gap in studies because there is no test method. Working on a possible test method.

- GPC37 guideline (Richard Vincent):
  Significant push developing appendix showing how GPC37 and 241 standards relate. Also been wrapping up airflow patterns and looking at new guidelines on visualization of airflow within buildings. There is a specified methodology for verifying airflow. Historically it was smoke, now there is a separate procedure to

follow. Removing information within the guidelines into the appendices for easier consumption.

Programs sub-committee: Scott Sherwood

**Programs sub-committee notes included in the appendices*

- Excellent meeting on June 11th with a lot of input.

- For the Indianapolis Summer ASHRAE conference program, we submitted two-seminars. One was approved, a live stream seminar #21 Emerging Air Purification Technology. Well attended, 67 people in the room and 16 virtual.

- For Orlando Winter 2025 we identified two seminars we will be submitting. First seminar will be Part 2 of Emerging Air Purification Technology. Second seminar is on Upper Air, Performance and DOE research. Katja may be the moderator. Richard may discuss upper air or someone else from GPC37.

- Possible tracks for winter 2025.

    - In-room UVC applications for infection control.
    - ASHRAE Standards and Guidelines in air cleaning and disinfection.
    - UVC and decarbonization (similar to original submission without same speakers).
    - How safe is my UVC
    - Monitoring: How do I know my UVC is working properly?
    - Current standards of UV

Handbook Subcommittee: Katja Auer

- Reviewed 2027 applications. Comment on action items. TC2.9 has been very active in reviewing the chapter. Katja pointed out some helpful resources such as the time line and mandate of the handbook committee to Ashley the incoming handbook chair.

- To review: there are two chapters in two handbooks. Systems & Equipment Handbook (updated 2024) and Applications Handbook (little behind on update). Online versions to the chapter changes can be made as an addendum to the print version.

Membership: Steve Martin

- Ashish Mathur rolls off and is outgoing TC2.9 Chair.
- Sam Guzman is incoming TC2.9 Chair and will remain a voting member
- Katja Auer is leaving as Handbook Chair and will chair 185
- Aaron (non-voting) is rolling off as secretary and will be vice-chair TC2.9 (voting)
- Derrick Sears will be secretary
- Ashley will be handbook Chair, Ashish is Vice-Chair

- *Call out: 3 years ago, we had 50 corresponding members. In 2024 we have 130*.

Outreach and Communications: Aaron Engel

- Promote the TC2.9
- Try to engage other TC2.9 member using social media and website to educate and promote
- 2025 TC2.9 will celebrate its 20-year anniversary. Worth promoting on social media this important milestone.
- We are all ambassadors of this technical meeting and need to find ways to work within ASAHRE to properly promote the TC2.9 and Ultraviolet Technologies.
- Possible interim sub-committee meeting before Winter 2025 to understand what are the rules of engagement how we can promote within the rules of ASHRAE.

TC Liaisons

- Bian Hafendorfer TC 62.1: Addendum L. Received recommendations from TC 2.9 to update wavelength information at 242 and below as an exclusion to the standard. The committee is updating the draft addendum. The way the standard is written, any air cleaning device must be UL2998 and another section that states, specifically for UV generating devices that prohibit 185 nm. This would change that to state “242 nm and below would be prohibited”. Consideration may be “prohibits 242 nm and below unless UL2998 certified”. Concern is ozone. Another option is to remove anything stating “UV” and keep “must be UL2998”. There may be language re: a required risk assessment where a plurality of fixtures used although may be UL2998 under 5 ppb of ozone, combined, may produce measurable amounts of ozone.

- Updates to 62. Making sure 62 published a guideline 42, enhancing IAQ in commercial and institutional buildings. It does include sections on UVC. Published towards end of 2023. Encourage all members to check it out.

- Matt Middlebrooks SSPC145: Update of 145.2 to include by-products and electronic devices. Addressed all comments that went out for first publication review. Submitted for second public review.145.4 (gas phase contaminants) developed for chamber + side duct test method. Test in-room devices.

- Katja Auer 9.6: Two guest presentations Dr. Brazil transmission and minimizing exposure pathogens and Jennifer Wagner looked at microbial contamination in operating rooms. Studied relative humidity.

- Epidemic Task Force final report is complete. The ETF will fall under TC9.6 infectious disease sub-committee and will need to take a deeper dive into research and develop an RTARs and update the healthcare FAQs. They don't want to see all standard 241 efforts fade. Respiratory disease in general are still significantly higher than pre-COVID. Measles and H1N1 are an issue with H1N1 spreading to more species.

- UL1995 standard will be withdrawn Jan. 1st 2025. All duct mounted and system mounted UV will now need to comply with UL 60335-2-40. Only for new products that don't presently have UL1598.

- UL8802 (fixed UVC equipment) is an ANSI safety standard. Anywhere the National Electric Code is adopted it becomes mandatory. UL8803 (portable UVC home use equipment).

- UL867 electrostatic air cleaners adding testing for UVC for materials. Specifying what UV wavelength for material resistance testing.

Motion to adjourn by Ashish Mathur. Meeting was adjourned at 12PM