TC 2.4 STANDARDS SUBCOMMITTEE
Agenda

Monday 2:00PM – 3:00PM, January 22, 2024
McCormick Place West W178B (1)

Code of Ethics Commitment

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.

1. CALL TO ORDER

A. Introductions

B. Chair's comments

i. Introduce Scott Paris as vice chair

2. UPDATE ON STANDARDS, GUIDELINES, AND MTGS WITHIN SCOPE OF TC 2.4

A. SSPC 52.2 - Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size (Todd McGrath)

i. ASHRAE 241 (Removal of Infectious Aerosols) discussion – Discussed ripple effect of this and how it relates to or affects 52.2 (specifically MERV A)

ii. Task force headed by Don T to investigate improvement/changing of App J conditioning procedure

iii. ASHRAE not happy with formatting of 52.2 revision – need to redo

B. GPC 35P - Method for Determining the Energy Consumption Caused By Air-Cleaning and Filtration Devices (Geoff Crosby)

- No update

3. ASHRAE LIAISONS

A. TC 2.3 Gaseous Air Contaminants and Gas Contaminant Removal Equipment (Kevin K)

i. SSPC 145.1 - Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media

(1) Approved update of definitions

ii. SSPC 145.2 - Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices

(1) Kathleen working on re-write to incorporate non-sorbent units

(2) New title purpose and scope

145.4P

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B. TC 2.9 Ultraviolet Air and Surface Treatment (Kathleen Owen)

i. SSPC 185.1 - Method of Testing UVC Lights for Use in Air Handling Units or Air Ducts to Inactivate Airborne Microorganisms

ii. SSPC 185.2 - Method of Testing Ultraviolet Lamps for Use in HVAC&R Units or Air Ducts to Inactivate Microorganisms on Irradiated Surfaces

(1) No Update

4. **SPC 185.3P**, Proposed Standard authorized May 2021. Standard 185.3P to be developed by SSPC 185.
Method of Testing In-Room Devices and Systems for Microorganism Removal or Inactivation in a Chamber.
5. **1. PURPOSE**
The standard establishes a method of test for evaluating in-room devices and systems for microorganism removal or inactivation in a chamber.
6. **2. SCOPE:**
2.1 The method of test specifies selected indicator microorganisms in the test chamber and defines procedures for generating the bioaerosols required for the method of test.
2.2 This standard provides a method for counting the number of viable microorganisms in the chamber to calculate the elimination efficiency for each microorganism.
2.3 This standard establishes minimum performance specifications for the equipment required to conduct the tests, defines methods of calculating and reporting results obtained from the test data, and establishes a reporting system to be applied to in-room devices and systems covered herein.
2.4 This standard does not address the health and safety effects of operating devices and systems in an occupied room.

Standard 185.4P – Proposed Standard authorized November 2021. Standard 185.4P to be developed by SSPC 185.
Method of Testing In-Room Ultraviolet Devices and Systems for Microbial Inactivation on Surfaces in a Test Room

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PURPOSE: This standard establishes a test method for evaluating the efficacy of ultraviolet disinfection systems for microbial inactivation on multiple surface locations in a test room.

SCOPE:
2.1 The standard applies to ultraviolet devices and systems using only germicidal ultraviolet energy for disinfection.

2.2 The method of test specifies selected indicator microorganisms and defines procedures for inoculating test carriers in a room-scale test chamber.

2.3 The method of test defines the test carrier quantity and positions in the test room.

2.4 This standard provides a method for counting the number of viable microorganisms on the test carriers before and after ultraviolet inactivation.

2.5 This standard establishes protocols and minimum requirements for the materials and equipment required to conduct the tests, defines methods of calculating and reporting results obtained from the test data, and establishes a reporting system to be applied to in-room devices and systems covered herein.

i. **2.6** This standard does not address the health and safety effects of operating devices and systems in an occupied room.

B. TC 5.4 Industrial Process Air Cleaning (Need Liaison)
   i. SPC 199 - Method of Testing the Performance of Industrial Pulse Cleaned Dust Collectors
      (1) Met 1-25-22 and are hashing thru revisions to update standard

C. TC 9.6 Healthcare Facilities
   i. SSPC 170 - Ventilation of Health Care Facilities (Jenny)

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(1) No update
(2) Looking for liaison
(3) Haven't met as of this meeting

D. SSPC 62.1 - Ventilation for Acceptable (Commercial) Indoor Air Quality
   i. Need Liason
   ii. Effort now going into IAQ Guide 42P – Intent to provide guidance on how to go above minimal acceptable IAQ

E. SSPC 62.2 - Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings
   i. No update
   ii. Need liason

F. SSPC 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings
   i. No update

G. US TAG to ISO/TC 142 - Cleaning equipment for air and other gases (Jon Rajala)

   a. WG 1 (Terminology) – OPEN APC
      i. 2-22-23 - N0942 - ISO 29464 (Ed.3) for registration at DIS stage
      ii. The document N0942-ISO 29464 (Ed. 3) has been released for registration but has not yet been registered. It has not yet undergone the TAG ballot process.
   b. WG 2 (UV-C) – Katja Auer (APC)
      i. No new updates
   c. WG 3 (General Ventilation) – Don Thornburg (Convener) & OPEN APC
      i. No new updates
   d. WG 4 (HEPA/ULPA) –R. Vijayakumar (Convener) & Andy Stillo (APC)
      i. The US TAG has recommended confirming ISO 29468-2, ISO 29468-3, and ISO 29468-4. ISO 29468-1 is expected to undergo the ballot process before the plenary meeting.
   e. WG 5 (Dust Collectors) – Open APC
      i. 4-26-23 – N0958 – ISO 16890-3 (Ed.2) for registration at DIS stage
   f. WG 7 (Durability of Cleanable Filter Media) – OPEN APC

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i. The group is working on “electrostatic effects of filter materials” as new project; No new updates.

g. WG 8 (Gas Phase) – Matt Middlebrooks (APC)

i. Working on ISO/PWI 23743 “Testing of gas phase air cleaners for improving perceived indoor air quality”

ii. No new updates

h. WG 9 (Gas Turbine) – OPEN APC

i. On 2-27-23, the document N0943, ISO 29461-3, was submitted for registration at the DIS stage. Additionally, the document N0944 contains replies to comments received on ISO/CD 29461-3.

ii. There is also ISO/PWI 29461-4, which focuses on static filters in marine/offshore applications. A vote was held for a 9-month extension (N0939), and another vote was conducted to modify the language in the title and scope from "marine" to "coastal" (N0949).

iii. Currently, the CD stage for ISO/PWI 29461-4 is open for comment until June 10, 2023, as indicated in document N0957.

i. WG 10 (Nuclear) – Satish Dinakaran (APC)

i. A new draft was voted on, but extensive comments were received. The convener of the group is currently reviewing these comments, primarily focusing on addressing editorial errors in the document.

j. WG 11 (Portable Air Cleaners) – OPEN APC

i. 5-24-23 – N0965 - K-J Choi named convener after two round of looking for a new convener.

ii. IEC/TC59/SC59N has 5 JWGs and a JMT to do maintenance on IEC/ISO 63086-1.

iii. Maintenance is necessary as the group creates other parts to work with the standard.

iv. ISO TC 142 approved participating as a JMT, but no experts were submitted to participate. This is good, because the standard will be IEC/ISO rather than just IEC. Standard was originally published without ISO collaboration.

v. JWG1 (particles) – 63086-2-1 – Went through CD stage and will soon finalize CDV (meeting today). Decision to submit the revised draft as FDIS 6/15.

vi. JWG2 (gases) – 63086-2-2 – Draft CD but may move on in June.

vii. Approved NWI proposal to start work on a standard for ozone (63086-2-7)

viii. JWG3 (microorganisms) – Preparing a draft for reduction of microorganisms (62086-2-3).

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ix. Published IEC/PAS 63086-3-1 (publicly available specification) using JEM 1467 as a reference /"pre-standard", titled "Method for Assessing the Reduction Rate of Key Bioaerosols by Portable Air Cleaners Using an Aerobiology Test Chamber"

x. JWG4 (general characteristics) – Has a CD on noise (IEC 60704-2-19). SWG 4-2 working on a round robin test (initially on the particle standard). SWG 4-3 is looking into sensors used with portable air cleaners. SWG 4-4 has started work on testing using the automatic mode (as opposed to max operation mode). SWG 4-5 has NWI proposal for a standard on measurement of electrical power for air cleaners.

xi. JWG 5 for special air cleaners – Most work in SWG 5.1 called "Fresh-Air air cleaners". There are a category common in Asia where the device combines an air cleaner (in the room) with fresh air brought in from outside the room through the device. This work is taking longer than IEC allows for developing a standard, so the work is being stopped and will be restarted soon. SWG 5-3 is for mobile robotic air cleaners and this work is in the very preliminary stages.

xii. Tim Johnson helped provide these updated (much appreciated!), but he is unable to attend this call, and will be phasing out of this work to better enjoy retirement. There have been over 50 virtual meetings per year associated with this work, and 2023 is on the same pace.

k. WG 12 (Sustainability) – Geoff Crosby (APC) & Jon Rajala (Acting APC)

i. No new update. The filter testing is currently underway, and the goal is to complete it by the end of August.

l. WG 13 (Biological equipment for waste gas) – OPEN APC

i. No activity from US in this WG.

m. Ad Hoc Group – Test Method for Airborne Microorganism Filtration Efficiency and Decontamination Efficiency

i. The NWIP was submitted in November 2021 and presented at the plenary meeting in December 2021. It was officially adopted on April 17, 2022. Currently, the working group is focused on refining the title, purpose, and scope of the project. They aim to shift the emphasis away from "filtration efficiency" to prioritize microorganism decontamination, considering the overlap with ISO 16890. The decision to establish a new working group for this topic was not formalized at the plenary meeting, potentially due to comments from certain country delegates. The Ad-Hoc Group (AHG) is finalizing the title, purpose, and scope before submitting it to ISO TC 142 for a vote.

H. MTG. ACR, Air Change Rate (Michael)
i. No meeting

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I. TC 4.10 (Sina Yousefi?)
   i. Starting a standard that includes particulates from the modeling aspect
   ii. Had not met as of this meeting

J. TG2.RAST (Kevin)
   i. Had 1st meeting. Formed WG to look at what additional standards would be needed to incorporate air cleaners that aren't currently covered.
   ii. 185.5

7. OLD BUSINESS

A. MTG, GPC for implementing cleaning technologies in combination; collaboration between TCs 2.4, 2.3, 2.9 (Brian K)
   i. Recommend techniques…

8. NEW BUSINESS

A. Need liaison for ANSI/ASHRAE/ACCA 180 – Bob Burkhead
B. Need to add ASHRAE 241 (Mike Corbat)
C. Need to add SPC 185.5P Method of Testing HVAC-duct mounted Devices and Systems and In-Room devices for Particle and Microorganism Removal (need liaison)

9. INFORMATION EXCHANGE

A. AFS (John Rajala, Rahul Bharadwaj)
   (1) Moved from 2 per year to annually
   (2) Filtcon 2024 March 4-6 Houston
B. CEN/TC 195 – Cleaning equipment for air and other gases (Paolo Tronville)
C. EUROVENT (Paolo Tronville) – aging procedure with fine particles

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D. IEST – Institute of Environmental Sciences and Technology – no update
E. AHRI 680 – Sanjeev and Chrystal. Working on updating
F. INDA – International Nonwovens Development Association (Tom Justice)
    i. FiltXPO – April 29-May 1 2025 Miami Beach
G. NAFA
    i. 2024 Technical Seminar April 17-19 Dallas
    ii. 2024 Annual Convention Oct 1-3 Maui
H. ISO/TC 22/SC 34 - Road vehicles - Propulsion, powertrain and powertrain fluids (Paolo Tronville, Bruce McDonald)
    i. WG3 – Air filters
    ii. Standard 12103 Part 3 – Published Standard
    iii. Urban loading aerosol being developed
    iv. Soot as separate (new) test aerosol in addition to ISO Fine (5011)
    v. Working on test method to utilize soot as an aerosol (95 nm to 105 nm)
I. UL 900 (Randall Haseman)

J. IAQ Meetings (Jeffrey Siegel)
    2024
K. FILTECH Expo and Conference
    i. Nov 12-14 2024 Cologne, Germany
L. Indoor Air Conference (ISIAQ)
    i. Next will be July 7-11 2024 - Honolulu
M. American Association for Aerosol Research
    i. Oct 3-7 2023 Portland
N. International Aerosol Conference
    i. 2026 China– Sept (1st week)
O. Asia Filtration Show / FILTREX
    i. TBD

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P. World Filtration Congress
   i. June 2025 Bordeaux France
Q. World Congress of Particle Technology
   i. No info
R. Korean Filtration and Separation Society
   i. 2023 Annual Conference VIRTUAL – Nov 6-10, 2023
S. Waterloo Filtration Institute (Jenny)
   Virtual Dec 2023 5-6, 8 am-12 est.

T. Healthy Buildings
   i. 2023 Asia July 16-19 China
   ii. 2023 Europe June 12-14 Germany

The focus of the **Standards Subcommittee** is on the writing and continued maintenance of standards and guidelines written for HVAC&R air filtration. This group not only reviews ASHRAE standard and guidelines but also keeps an active reporting system of HVAC&R standards and guidelines produced by other organizations and other countries around the world.
This TC is Cognizant for the following standards

ANSI/ASHRAE Standard 52.2: Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size
ANSI/ASHRAE Standard 185.1: Method of Testing UVC Lights for Use in Air Handling Units or Air Ducts to Inactivate Airborne Microorganisms.
This TC is CoCognizant with TC 7.3 lead for the following standard

ANSI/ASHRAE/ACCA 180: Standard Practice for Inspection and Maintenance of Commercial-Building HVAC Systems

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10. ATTENDANCE –

	Name	Company/Address	Email
1	Bobby Singer	BHT	
2	Todd Mcgrath	Glasfloss	tmcgrath@glasfloss.com
3	Jenny Berens	FFT	Jenny.berens@freudenberg-filter.com
4	Sissi Liu	Metalmark	sissi@metalmark.xyz
5	Daniel Rush	UT Austin	Daniel.rush@utexas.edu
6	Kevin Kwong	LMS	kevin@lmstechnology.com
7	Chris Hsieh	Trane	chsieh@trane.com
8	Don Thornburg	Camfil	Don.Thornburg@camfil.com
9	Michael Corbat	Rensa	mcorbat@rensafiltration.com
10	Mark Tucker	Mativ	Mtucker3034@icloud.com
11	Jon Rajala	AAF	jrajala@aafintl.com
12	Paolo Tronville	Politecnico di Torino	Paolo.tronville@polito.it
13	Jeni Wong	Custom Filter	jwong@customfilter.net
14	KJ Choi	Clean and Science	Kchoi228@gmail.com
15	Vivek Gaur	Columbus Industries	vgaur@colind.net
16	Mick Flom	3M	Mflom2@mmm.com
17	Marisa Jimenez-Segovia	Air Care de Mexico	marisaj@aircare.com.mx
18	John Randtke	Schneider Electric	John.randtke@se.com
19	Henry Greist	Lennox Industries	Henry.greist@lennoxind.com
20	Sanjeev H	Lennox Industries	skh@lennoxind.com
21	Bryan Gerhardt	3M	bgerhardt@mmm.com
22	Keith Chesson	Parker	Keith.chesson@parker.com
23	Tim Ahn	Clean and Science	timahn@cleanandscience.com
24	Tom Justice	Zene	justfilter@yahoo.com