1. **CALL TO ORDER**
   1. Introductions – NA due to virtual meeting
   2. Chair’s comments
      1. None
2. **UPDATE ON STANDARDS, GUIDELINES, AND MTGS WITHIN SCOPE OF TC 2.4**
   1. SSPC 52.2 - Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size (Todd McGrath)
      1. PM - 52. 2 - Addendum B Passed and is out and part of method
      2. Proposal to add optional bio-aerosol version of 52.2. HAS BEEN PUBLISHED
   2. GPC 35P - Method for Determining the Energy Consumption Caused By Air-Cleaning and Filtration Devices (Geoff Crosby)

* No GPC 35 Summer Meeting
* RP-1734 – Great progress out of Purdue but still experiencing delays. Probably 3 months out.
* Henry (Hank) Greist of Lennox will be joining the committee as a non-voting member following the summer meetings
* Bruce McDonald, Andy Untz, and Joe Pessa have all been added to the committee as non-voting members
* Upcoming work will be to define testing/loading procedure. Starting with ASHRAE 52.2/ISO 16890 Duct procedures, adding in KCl sub-micron loading developed at Purdue. Hope is to have this methodology by October
* Interim virtual meeting to be scheduled following RP-1734 PMS meeting at end of July
* Following this will update our Work Plan to submit to ASHRAE for the final revision of it…
* In-person committee working session (2-3 days) January 2022 in Las Vegas prior to Winter meeting, which starts January 29, 2022
* Goal is to have the GPC 35 Draft complete by the Las Vegas 2022 meeting
* GPC 35 meeting not happening in Las Vegas but will try to schedule interim meeting

1. **ASHRAE LIAISONS**
   1. TC 2.3 Gaseous Air Contaminants and Gas Contaminant Removal Equipment (Matt Middlebrooks)
      1. SSPC 145.1 - Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media
         1. No activity
      2. 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. No further update as of 1-25-22
   2. TC 2.9 Ultraviolet Air and Surface Treatment (Kathleen Owen)
      1. SSPC 185.1 - Method of Testing UVC Lights for Use in Air Handling Units or Air Ducts to Inactivate Airborne Microorganisms
      2. 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
2. **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.**
3. **1. PURPOSE**  
   The standard establishes a method of test for evaluating in-room devices and systems for microorganism removal or inactivation in a chamber.
4. **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**

**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.

* + 1. **2.6** This standard does not address the health and safety effects of operating devices and systems in an occupied room.
  1. TC 5.4 Industrial Process Air Cleaning (Len Duello has retired…new liaison??)
     1. 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
  2. TC 9.6 Healthcare Facilities
     1. SSPC 170 - Ventilation of Health Care Facilities
        1. No update
        2. Looking for liaison
  3. SSPC 62.1 - Ventilation for Acceptable (Commercial) Indoor Air Quality (Wane Baker)
     1. New liaison – Wane Baker
     2. No update
     3. Effort now going into IAQ Guide 42P – Intent to provide guidance on how to go above minimal acceptable IAQ
  4. SSPC 62.2 - Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings (Brent Stephens)
     1. No update
  5. SSPC 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings (Michael Corbat)
     1. No update
  6. US TAG to ISO/TC 142 - Cleaning equipment for air and other gases (Kevin Kwong)

Virtual plenary meetings were held on November 30 & December 2, 2021

# Working Group 2: UV-C TECHNOLOGY

**ISO 15858:2016 UV-C Devices -Safety information -Permissible human exposure**

ISO 15858 is in revision. Discussions involved the increasing usage of UV disinfection technology, LED UV, and 222nm UV during the pandemic.

# Working Group 3: General ventilation filters

The following projects have been submitted for FDIS balloting:

* **ISO/DIS29462 (ed .2) Field testing of general ventilation filtration devices and systems for in situ removal efficiency by particle size and resistance to airflow**
* **ISO/DIS16890-2 (ed. 2) Air filters for general ventilation – Part 2: Measurement of fractional efficiency and air flow resistance**
* **ISO 16890-4 (ed. 2) Air filters for general ventilation - Part 4: Conditioning method to determine the minimum fractional test efficiency**

Work is in progress on **ISO/CD 16890-5 “Measurement of fractional efficiency and air flow resistance for flat sheet filter media”**

**ISO** **16890-3 “Air filters for general ventilation — Part 3: Determination of the gravimetric efficiency and the air flow resistance versus the mass of test dust captured”** underwent a systematic review and a new draft has been started.

# Working Group 4: HEPA and ULPA filters

The following project was recently submitted for FDIS balloting:

**ISO/CD 29463-5: High-efficiency filters and filter media for removing particles in air - Part 5: Test method for filter elements**

A resolution was passed unanimously to register the following project as a New Work Item:

**ISO 29463-1:2017 High-efficiency filters and filter media for removing particles in air –Part 1: Classification, performance testing and marking**

# Working Group 5: Dust collectors, droplet separators, and purifiers

The following project was passed as a Working Draft in November 2021:

**ISO 16313-2: Laboratory test of dust collection systems utilizing porous filter media online cleaned using pulses of compressed gas – Part 2: Systems utilizing integrated fans**

A resolution was approved unanimously to reinstate the following project as a Technical Specification:

**ISO/PWI 16313-1 Laboratory test of dust collection systems utilizing filter media online cleaned using pulses of compressed gas –Part 1: System not utilizing integrated fan**

**Working Group 7: Cleanable filter media used in industrial applications**

Most work is focused on developing **ISO/NP 23742: Testing method for the evaluation of permeability and filtration efficiency distribution of bag filter medium.**

**Working Group 8: Gas Phase Air Cleaning Devices and Media**

**ISO 10121-3: Test methods for assessing the performance of gas-phase air cleaning media and devices for general ventilation - Part 3: Classification system for treatment of make up air**

Some laboratory testing still needs to be completed. The group is working on finalizing ISO 10121-3 for the FDIS ballot.

A resolution was approved unanimously to reinstate the following project as a Preliminary Work Item:

**ISO/PWI 23743: Testing of gas phase air cleaners for improving perceived indoor air quality**

**Working Group 9: Particulate air filter intake systems for rotary machinery and stationary internal combustion engines**

**ISO 29461-1: Air filter intake systems for rotary machinery – Test methods –**

**Part 1: Static filter elements**

Revised standard was published in September 2021.

**ISO/NP 29461-3: Air intake filter systems for rotary machinery –**

**Part 3: Test methods for mechanical integrity of filter elements**

Development on this project will increase in 2022 with a DIS registration date in January 2023.

**ISO/PWI 29461-4: Air intake filter systems for rotary machinery –**

**Part 4: Test methods for static filter systems in marine and offshore environments**

Registration of a DIS is expected in 2022.

**ISO AWI 29461-7, Air filter intake systems for rotary machinery – Test methods –**

**Part 7: Filter element endurance test in fog and mist environments**

FDIS is under preparation

# Joint Working Group 10: Aerosol filters for nuclear applications (Joint between ISO/TC 142 and ISO/TC 85/SC 2)

**ISO 23137-1: Requirements for nuclear aerosol filters to be used against specific severe conditions - Part 1: General requirements**

Most activity is concentrated on the development of this project.

# Working Group 11: Portable room air cleaners for comfort applications (Joint between ISO/TC 142 and IEC/TC 59)

A new subcommittee of TC 59 (SC59N) was formed on November 3, 2021. SC59N approved unanimously the creation of 5 Working Groups and 1 Maintenance Team as follows:

WG 1 - Reduction of particles

To develop performance test method standards for reduction of particles by household and similar electrical air cleaning appliances

WG 2 - Reduction of chemical gases and ozone

To develop performance test method standards for reduction of chemical gases by household and similar electrical air cleaning appliances

WG 3 - Reduction of microorganisms

To develop performance test method standards for reduction of microorganisms by household and similar electrical air cleaning appliances

WG 4 - General characteristics

To develop guidelines for and management of Round Robin Testing, noise measurement (with TC 59/WG 2), consumer information on sensor communications, measurement of air cleaning appliances in automatic mode, and measurement of electrical power/energy

WG 5 - Special types of air cleaners

To develop performance test method standards for special use air cleaning appliances, including fresh-air, air cleaning appliances, passenger vehicle portable air cleaning appliances and robotic/mobile air cleaning appliances

MT 6 - Maintenance of IEC 63086-1

To maintain IEC 63086-1, Household and similar electrical air cleaning appliances - Methods for measuring the performance - Part 1: General requirements

# Working Group 12: Sustainability of air cleaning equipment and media

No activity in this working group. They are waiting on the results of an ASHRAE project at Purdue University. The following projects are the responsibility of WG12:

**ISO/PWI 12249-1 - Particulate air filters for general ventilation - Part 1: Method of calculation for the life cycle cost for air cleaning devices**

**ISO/PWI 12249-2 - Particulate air filters for general ventilation - Part 2: Method of calculation for the energy performance of air cleaning devices and for the classification of the energy performance**

# Working Group 13: Biological Equipment for Waste Gas Treatment

Work is primarily focused on the following two projects:

**ISO/WD 23138 - Biological equipment for treating air and other gases - General Requirements**

**ISO/WD 23139 - Biological equipment for treating air and other gases - Application guidance for deodorization in wastewater treatment plants**

* 1. MTG. ACR, Air Change Rate (Delegate – Bob; Alternate – Michael)
     1. No meeting
  2. TC 4.10 (Brian K)
     1. Starting a standard that includes particulates from the modeling aspect
     2. Had not met as of this meeting
  3. TG2.RAST (Kathleen)
     1. Had 1st meeting. Formed WG to look at what additional standards would be needed to incorporate air cleaners that aren’t currently covered.

1. **OLD BUSINESS**
   1. MTG, GPC for implementing cleaning technologies in combination; collaboration between TCs 2.4, 2.3, 2.9 (Brian K)
      1. No update
2. **NEW BUSINESS**
   1. Need liaison for ANSI/ASHRAE/ACCA 180 – Bob Burkhead
      1. No update
3. **INFORMATION EXCHANGE**
   1. AFS (John Rajala, Rahul Bharadwaj)
      * 1. Moved from 2 per year to annually
        2. Next conf Louisville FiltCon May 1-3, 2023 Louisville, KY
   2. CEN/TC 195 - Air filters for general air cleaning (Paolo Tronville)
   3. EUROVENT (Paolo Tronville) – No update
   4. IEST – Institute of Environmental Sciences and Technology (Vijay) – no update
   5. AHRI 680 – Performance Rating Residential Air Filter Equipment

Vincent Hwang -Last edition published 2016 – due for republishing in 2021

* 1. INDA – International Nonwovens Development Association (Tom Justice)
     1. FiltXPO
        1. Co-locate with IDEA Miami - March 28-31, 2022
  2. NAFA (Tom Justice)
     1. 2022 Technical Seminar Louisville, Ky Apr 5-8
     2. 2022 Annual Convention Coeur d’Alene, Idaho Sep 19-22
  3. ISO/TC 22/SC 34 - Road vehicles - Propulsion, powertrain and powertrain fluids (Paolo Tronville, Bruce McDonald)
     1. WG3 – Air filters
     2. Standard 12103 Part 3 – Published Standard
     3. Urban loading aerosol being developed
     4. Soot as separate (new) test aerosol in addition to ISO Fine (5011)
     5. Working on test method to utilize soot as an aerosol (95 nm to 105 nm)
  4. UL 900 (Randall Haseman)
     1. Looking at adding Carbon Filters to standard – No more
     2. Pushback on new proposal – all comments have been against – all votes were against
  5. IAQ Meetings (Jeffrey Siegel)
     1. May 4-6 2022 in Athens, Greece
  6. FILTECH Expo and Conference
     1. March 8-10 2022 Cologne, Germany
  7. Indoor Air Conference (ISIAQ)
     1. Next will be 2022 June 12-16 in Finland
  8. American Association for Aerosol Research
     1. Oct 3-7 2022 in Raleigh
  9. International Aerosol Conference
     1. 2022 Athens Greece
  10. Asia Filtration Show / FILTREX
      1. TBD
  11. World Filtration Congress
      1. WFC 13 San Diego, Moved To Oct 5-9 2022
  12. World Congress of Particle Technology

i. No info

* 1. Korean Filtration and Separation Society
     1. 2nd Air Filtration Basic Course May 30-31
     2. 2022 KFS Conference Nov 21-22, Hanbat University
  2. WFI Annual Conference

No update

* 1. Healthy Buildings
     1. No update

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**

1. **ATTENDANCE – names carried over from 9/21 Virtual**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Name** | **Company/Address** | **Email** |
| 1 | Bobby Singer | BHT |  |
| 2 | Todd Mcgrath | Glasfloss |  |
| 3 | Geoff Crosby | Lydall |  |
| 4 | Matt Middlebrooks | Filtration Group |  |
| 5 | Kia Kiantaj | LMS |  |
| 6 | Christine Sun | Waterloo Filtration Institute |  |
| 7 | Len Duello | Lincoln Electric |  |
| 8 | Don Thornburg | Camfil |  |
| 9 | Michael Corbat | Rensa |  |
| 10 | Tim Johnson | TSI |  |
| 11 | Morris Richardson | Johns Manville |  |
| 12 | Dara Feddersen | H & V |  |
| 13 | Jeni Wong | Johns Manville |  |
| 14 | Jeffrey Siegel | U of T |  |
| 15 | Justin Koczak | TSI |  |
| 16 | Mick Flom | 3M |  |
| 17 | Bernard Olsen | U of Minn |  |
| 18 | Bruce McDonald | Retired |  |
| 19 | Behnat Shoar | Lydall |  |
| 20 | Rahul Bharadwaj | Lydall |  |
| 21 | KJ Choi | Clean & Science |  |
| 22 | Keith Chesson | Parker |  |
| 23 | Jon Rajala | AAF Flanders |  |
| 24 | Bob Burkhead | BHT |  |