MEETING MINUTES
TC 2.3 - Gaseous Contaminants/Removal Equipment
Standards Subcommittee Meeting
Wednesday, January 10th 2018, 10:00-noon EST
Web Meeting – no room

1) **Introductions and Sign-In**
The meeting was called to order at 10:05 pm by Chair Paolo Tronville. Logged in were:

Peter Freeman
Dan Haas
Sanjeev Hingorani
Gemma Kerr
Brian Krafthefer
Kevin Kwong
Chang-Seo Lee
Paula Levasseur
Ed Light
Matt Middlebrooks
Kathleen Owen
Paolo Tronville
Marwa Zataari

2) **Approval of the agenda**
- Approved as distributed.

3) **Liaison Report (Do we have a Standards liaison? Who is he/she?)**
- There is no Standards Liaison listed in the TC 2.3 Roster.

4) **Update on standards within scope of ASHRAE TC 2.3**
   a) GPC 27P "Procedures for measurement of gases in indoor environments" – *Gemma Kerr*
   - The committee is dealing with comments received during the Fourth Public Review. Most of the proposed comment responses have been approved. It was decided to proceed next with a partial (fifth) Public Review.
   b) ASHRAE Std. 145.1-2015 "Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Loose Granular Media" – *Matt Middlebrooks*
   - There is currently no activity. Review of the Standard is not required for another two years. It is currently not much used.
   c) ASHRAE Std. 145.2-2016 "Laboratory Test Method for Assessing the Performance of Gas-Phase Air Cleaning Systems: Air Cleaning Devices" – *Matt Middlebrooks*
   - The committee is working to change the standard to include testing of energetic devices. The revised Title, Purpose and Scope have been approved by ASHRAE. In Chicago, the meeting will include a 1-hour program session that was rejected for the conference program. This is not included in the schedule and should be posted on the TC 2.3 website to encourage attendance. Usage of the current standard is low because the validation project RP-1720 is stalled, and because it is not often included in construction specifications.

5) **ASHRAE SPCs/SSPCs/TCs/TGs/TRGs activities**
   a) TC 2.4 "Particulate Air Contaminants and Particulate Contaminant Removal Equipment" – *Gemma Kerr*

- The TC is functioning well.

i) GPC35P "Method for Determining the Energy Consumption Caused by Air-Cleaning and Filtration Devices" – *Matt Middlebrooks*
- Brian and Matt are working on text for the calculations for gas-phase filters and combination filters and will present it in Chicago. The pressure drop is important and different from that for particle filters.

ii) SSPC 52.2 "Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size"- *Gemma Kerr*
- The biggest issue facing the committee is whether to approve ISO 16890 (if approved, this would sunset ANSI/ASHRAE Standard 52.2). Discussion continued, but the committee is not yet ready to take a vote on this matter.
- Bob Burkhead gave a presentation on work his laboratory has done using a 52.2 test rig coupled with a large environmental chamber. Testing particle concentrations in the chamber over a period of time allows the impact of recirculation on filter performance to be evaluated.

b) TC 2.9 "Ultraviolet Air and Surface Treatment" – *Ashish Mathur*

i) SPC 185.1-2015 "Method of Testing UVC Devices for use in air handling units or air ducts to inactivate airborne microorganisms" – *Kathleen Owen*
- They are working to change the calculations and statistics as the method is currently producing results that are too variable.

ii) SPC 185.2-2014 "Method of Testing Ultraviolet Lamps for Use in HVAC&R Units or Air Ducts on Irradiated Surfaces" - *Kathleen Owen*
- An RTAR for a round robin testing project is in progress.

c) TC 9.11 "Clean Spaces" – *TBD*
- There was no report.

d) SSPC 62.1 "Ventilation and IAQ High Rise Buildings" – *Chris Muller*

i) Research
- There was no report

ii) Education
- There was no report

e) SSPC 62.2 "Ventilation and IAQ Low Rise Buildings" – *Bob Burkhead*
- Members of the 52.2 committee have succeeded in persuading 62.2 to delay the decision to specify use of ISO 16890 for a year until more data on the performance of the standard has been obtained.

6) Information Exchange

a) AFS – *KJ Choi*
- The AFS Spring Conference (FiltCon 2018) will take place April 23-25 at the Mystic Lake Conference Center in Prior Lake, MN
- The AFS Fall 2018 Conference will take place September 11-12 at the North Charleston Marriott

b) ASTM D22.05 "Air Quality" SC "Indoor Air" – *Peter Freeman*
- A number of relevant standards are presently under revision, see details below:
- **D4861** Practice for Sampling and Selection of Analytical Techniques for Pesticides and Polychlorinated Biphenyls in Air
- **D5116** Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
- **D6485** Guide for Risk Characterization of Acute and Irritant Effects of Short-Term Exposure to Volatile Organic Chemicals Emitted from Bedding Sets
- **D7034** Guide for Deriving Acceptable Levels of Airborne Chemical Contaminants in Aircraft Cabins Based on Health and Comfort Considerations
- **D7339** Test Method for Determination of Volatile Organic Compounds Emitted from Carpet

using a Specific Sorbent Tube and Thermal Desorption / Gas Chromatography
- **D5791** Guide for Using Probability Sampling Methods in Studies of Indoor Air Quality in Buildings
- **D6332** Guide for Testing Systems for Measuring Dynamic Responses of Carbon Monoxide Detectors to Gases and Vapors
- **D6306** Guide for Placement and Use of Diffusion Controlled Passive Monitors for Gaseous Pollutants in Indoor Air
- **D6245** Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation
- D6399 Guide for Selecting Instruments and Methods for Measuring Air Quality in Aircraft Cabins
- A number of other standards are due for review
- There are also several active work items aimed at developing new standards

c) ASTM D28.04 "Activated carbon" SC "Gas Phase Evaluation Tests" – *Peter Freeman*
   i) D6646-03 (2014) "Standard Test Method for Determination of the Accelerated Hydrogen Sulfide Breakthrough Capacity of Granular and Pelletized Activated Carbon"
   - The current standard uses 10,000 ppm challenge concentration and some filters will adsorb 60% weight by weight. They are looking to develop other tests more relevant to filters used for IAQ level contaminants. In addition, there is a work item to develop a quick test to distinguish filter raw material (type of carbon) based of perfluorocarbon challenge.

d) ISO/TC 142 "Cleaning Equipment for Air and Other Gases" – *Matt Middlebrooks*
   i) WG8 "Gas-phase air cleaning devices"
      (1) ISO/NP 10121-3 "Test method 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"
      - There was a web conference in December. The method aims to use data from SO_2, NO_x, O_3, and toluene to determine classification. Mixed gas testing is difficult. They want to add an informative Appendix to allow people to evaluate their outdoor air filters.
   ii) WG11 "Portable room air cleaners for comfort applications"
      (1) ISO/NP 17970-1 "Measurement of the performance of portable room air cleaners - Part 1: Performance against non-viable particulate matter"
      - Progress is currently held up because IEC TC 59 are developing an identical test method. Formation of a joint Working Group is being discussed but this may take some time to set up. There is some informal collaboration, with WG 11 members taking part in a recent IEC web conference.
      (2) ISO/PWI 17970-2 "Measurement of the performance of portable room air cleaners - Part 2: Performance against gases"
      - No progress, see above.
   iii) US Technical Advisory Group (TAG) to ISO/TC 142
      - There was no report

e) ISO/TC 205 "Building environment design" – *TBD*
   i) ISO 16814:2008 "Building environment design - Indoor air quality - Methods of expressing the quality of indoor air for human occupancy" (reviewed and confirmed in 2014)
   - There have been no recent developments

f) USGBC – *Charlene Bayer*
- They are working on LEED version 4.1. In addition, the existing buildings performance pilot credit using the ASHRAE IAQP method will be extended to new buildings. A new pilot credit is being developed for biofilia.

g) CEN/TC 156 "Ventilation for buildings" – *Paolo Tronville*
   i) EN 16798-3:2017 "Energy performance of buildings - Ventilation for buildings - Part 3: For non-residential buildings - Performance requirements for ventilation and room-conditioning

systems (Modules M5-1, M5-4)" (Supersedes EN 13779:2007);
- This is intended to ensure that environmental quality is preserved during energy saving

ii) CEN/TR 16798-4:2017 "Energy performance of buildings - Ventilation for buildings - Part 4: Interpretation of the requirements in EN 16798- 3 - For non-residential buildings - Performance requirements for ventilation and room-conditioning systems(Modules M5-1, M5-4)"
   (1) This document contains information to support the correct understanding and use of EN 16798-3

h) Other ISO TCs (and also CEN, ITRI, etc.)
- There was no report

i) http://www.cluster-essc.eu/ - The European Sensor-Systems Cluster (ESSC)
- This link is provided to allow people to check on the results of this research project which was supposed to develop inexpensive sensors for VOCs. Their performance should be carried out subsequently. As of now, they validated only benzene sensor.

7) New business

- Ed Light presented his ideas for a new Multidisciplinary Task Group on VOCs. The proposed Title, Purpose and Scope are attached. The intent is to utilize new data on behavior of VOCs and mixtures to update approaches to VOC assessment and control in buildings. There was no formal feedback from meeting participants, as they had not seen the proposed TPS before the meeting. Paula requested Ed to submit his written proposal to her for distribution to members if he wanted to raise this under New Business at the TC 2.3 meeting.
- Chang-Seo asked whether it was true that AHAM is considering adding gaseous contaminants to their chamber test for stand-alone air cleaners. No one knew the answer, but we should find out, as this is important to TC 2.3.

8) Any other business

- There was no other business raised for discussion.

9) Adjourn

- The meeting was adjourned at 11:42 am EST.

MTG PROPOSAL FORM

Return Form to:
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E-mail: techserv@ashrae.org

Date: January 10, 2018 DRAFT

MTG Name: ***Multidisciplinary Task Group on VOC Mixtures in Indoor Air***

Contact: Ed Light, CIH Elight@Building-Dynamics.com (240) 899-6926

Sponsorship Requested: EHC; TC 2.3 and 4.3; SPCC 62.1 and 189.1; GPC 27; TRG4.IAQP

MTG Scope:

1. Review literature on the incidence, effects and regulation of VOCs.
2. Prepare critical review of how ASHRAE standards address VOC mixtures.
3. Propose updated approaches to the assessment and control of VOCs.
4. Recommend research to improve understanding of VOCs.

Impact on TC/TG/TRGs and Other MTGs:

Facilitate:

- Standards updates (i.e., 62.1 and 189.1).
- RTAR proposals
- Guidance Documents

Note: ASHRAE Committees are currently considering changes to listed VOCs of concern. This continues does not fully consider current science and does not address overall IAQ.

Supporting Rationale:

Little information on low-level VOC mixtures was available when VOC provisions in ASHRAE Standards were developed. The science has progressed since that time, and could support more effective approaches to VOC assessment and control. Teaming of engineers with health scientists and chemists is needed to develop practical criteria consistent with current science. Questions which might be addressed by an MTG include:

General:

- Can conclusions be drawn from testing for a small fraction of VOCs in indoor air?
- Can a standard list of "Contaminants of Concern" be developed to assess and control overall IAQ?
- Are current Cognizant Authority contaminant criteria appropriate for use as IAQ standards?
- What research is needed for a better understanding of VOC mixtures with respect to health risks, ventilation rates, air filtration, etc.?

ASHRAE Standards:

- Can 62.1 ventilation rates be safely reduced with respect to VOCs?
- Are VOC tests appropriate for acceptance of high-performing buildings (189.1)?
- How should filters be classified with respect to VOC control?