

ASHRAE MEETING MINUTES

Houston, TX

TRG4.IAQP

Indoor Air Quality Procedure Development

Sunday, June 24, 2018: 10:30 - 12:00

Meeting Location
Hilton Hotel - Room 340AB

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1. **Call to Order** (10:30). Introduction of guests and members
2. **Roster:**
 - **(voting) Members (16)** - Dean Tompkins, Marwa Zaatari, Nick Agopian, Charlene Bayer, Robert Burkhead, Barney Burroughs, Jim Dennison, Elliot Horner, Gemma Kerr, Chang-Seo Lee, Chris Muller, Jeff Roseberry, Charlie Seyffer, Scott Sherwood, Erica Stewart, Scott Williams
 - **Corresponding Members (3)** - William Chadwick, Henry Greist, Brian Hafendorfer
 - **Provisional Corresponding Members (13)** - Kevin Bowe, Nick Clements, Clifford Cooper, Mohammad Daoud, Kautuk Dikshit, Liju Eapen, Adil Inam, Mitesh Kumar, Luke Leung, Stephany Mason, Joel McKellar, Dhvani Mehta, Catherine Thibaud
3. **Membership Present** - Voting Members Present

(voting) Members Present (**11**): Dean Tompkins, Marwa Zaatari, Nick Agopian, Barney Burroughs, Bob Burkhead, Jim Dennison, Elliott Horner, Gemma Kerr, Jeff Roseberry, Charlie Seyffer, Scott Williams

(voting) Members Absent (**5**): Charlene Bayer, Chang-Seo Lee, Chris Muller, Scott Sherwood, Erica Stewart

Voting Members Present: 11 (of 16)

[Note: As will be evident within these Minutes, the number of voting members (VM) varied between **10** and **12**, depending on whether certain VM were present during a Vote.]

Quorum Present?: Yes

[re: Motions: $1/2 \times 16 = 8$ members needed to be present for a Quorum. A Quorum to conduct business meetings is established when the number of voting members present is four (4) or exceeds $1/2$ of the number of total voting members of the committee, whichever is larger. See Figure A-2 (Appendix herein).]

TRG4 Leadership

Chair
Vice-Chair
Secretary

before 7/1/2018

Dean Tompkins
Marwa Zaatari
Nick Agopian

after 7/1/2018

Marwa Zaatari
Nick Agopian
Dean Tompkins (acting, non-voting)

4. **Ethics Statement** (10:40) (and silence cell phones)

- The Chair presents the Ethics Statement:
 “Commitment to the ASHRAE Code of Ethics – In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests.”
(See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)

5. **Approval of Meeting Minutes** (10:40) from Winter Meeting (Chicago, IL)

Actionable Task(s): Formal Vote

Motion to: Approve the Chicago (Jan. 2018) Meeting Minutes of the TRG4
Motion by: Elliott
2nd-ed by: Gemma
Discussion: none

Voting Tally:

For: 10; Against: 0; Abstain: 0; Absent: 6 (= 5 + Bob) Total: 16
Motion: **Passed** [10 > 8 (= 1/2 x 16)]

6. **Identification & Reporting from ASHRAE liaisons** (10:45)

- Dennis Wessel (Section Head for Section 4) provided the following:
 - guidance via the ASHRAE website on how to view the committees that one is participating in.
 - mentioned that the Hightower Award - Due Sep. 1
 - commented on the use of ASHRAE letterhead which has specific requirements if it is used at all; the ASHRAE letterhead can be used for internal communication within ASHRAE but that's about it.
 - mentioned that in 2020, ASHRAE is looking for historical journal articles/programs.
 - The ASHRAE TC MOP (Manuals for Procedures):
 - is available on the ASHRAE website
 - might want to consider including the MOP in the Meeting Minutes
 - Basecamp: Use has appeal for members; ASHRAE will be developing a training course for interested users of Basecamp
 - stated that the TRG4.IAQP will need vote itself periodically to remain a TRG
- CEC (Conference & Expositions Committee)
 - New Program Format: **“Extended Abstract”**
 - To be tried firstly in Kansas City (“Research Summit”)
 - Will be treated like a normal Conference Paper
 - 3-pager (not standard 8-pager)
 - **Conference Papers will be placed back into ASHRAE Transactions**
 - Recommendation is to have this initiative start in Atlanta Meeting
- **Actionable Task(s):** The Leadership of the TRG4 will check to see if TRG4.IAQP is signed-up for Basecamp use by members.

7. Design Compounds Discussion (10:50)

Design Compounds (approved on/by TRG4.IAQP to date)
acetaldehyde, toluene, ozone, PM 2.5

Design Compounds from DA-68 of SSPC 62.1: **Table 1**

Table 6.3.2.1 Design compounds, PM2.5, and their design targets

<u>Compound or PM2.5</u>	<u>Cognizant Authority</u>	<u>Design Target</u>	<u>Notes</u>
<u>Acetaldehyde</u>	<u>Cal EPA CREL (June 2016)</u>	<u>140 ug/m³</u>	
<u>Acetone</u>	<u>AzBB LCI</u>	<u>1,200 ug/m³</u>	
<u>Benzene</u>	<u>Cal EPA CREL (June 2016)</u>	<u>3 ug/m³ (1)</u>	<u>A</u>
<u>Dichloromethane</u>	<u>Cal EPA CREL (June 2016)</u>	<u>400 ug/m³</u>	
<u>Formaldehyde</u>	<u>Cal EPA CREL (2004)</u>	<u>33 ug/m³</u>	
<u>Naphthalene</u>	<u>Cal EPA CREL (June 2016)</u>	<u>9 ug/m³</u>	
<u>Phenol</u>	<u>AzBB LCI</u>	<u>10 ug/m³ (1)</u>	<u>A</u>
<u>Tetrachloroethylene</u>	<u>Cal EPA CREL (June 2016)</u>	<u>35 ug/m³ (1)</u>	<u>A</u>
<u>Toluene</u>	<u>Cal EPA CREL (June 2016)</u>	<u>300 ug/m³</u>	
<u>1,1,1-trichloroethane</u>	<u>Cal EPA CREL (June 2016)</u>	<u>1000 ug/m³</u>	
<u>Xylene, total</u>	<u>AzBB LCI</u>	<u>500 ug/m³</u>	
<u>Carbon dioxide</u>		<u>1100 ppm or equivalent to VRP (2)</u>	<u>B</u>
<u>Carbon monoxide</u>	<u>USEPA NAAQS</u>	<u>9 ppm</u>	
<u>PM2.5</u>	<u>USEPA NAAQS (annual mean)</u>	<u>12 ug/m³ (3)</u>	<u>C</u>
<u>Ozone</u>	<u>USEPA NAAQS</u>	<u>70 ppb</u>	
<u>Ammonia</u>	<u>Cal EPA CREL (June 2016)</u>	<u>200 ug/m³ (4)</u>	<u>D</u>

- A. Benzene, phenol, and tetrachloroethylene shall not be included in the mixture calculation for upper respiratory tract irritation, eye irritation, and CNS depression as they are not expected to cause these principal effects at the design target.
- B. The design target for carbon dioxide is 1100 ppm or the equivalent steady state concentration calculated using the ventilation rate calculated using the Ventilation Rate Procedure, whichever is higher. Appendix D contains requirements for how to calculate the CO₂ equivalent steady state concentration.
- C. Outside the U.S., if the outdoor concentrations of carbon monoxide, PM2.5, or ozone exceed the Design Target, the limit is equal to the applicable ambient air standards for the region where the project is located if one exists
- D. Ammonia shall be included only for spaces that include non-human animals.

Table 1, (current) Design Compounds (DA-68)

Table 6.3.2.2. Mixtures of compounds

<u>Upper Respiratory Tract Irritation</u>	<u>Eye Irritation</u>	<u>Central Nervous System</u>
<u>acetaldehyde</u>	<u>acetaldehyde</u>	<u>acetone</u>
<u>acetone</u>	<u>acetone</u>	<u>dichloromethane</u>
<u>xylene, total</u>	<u>xylene, total</u>	<u>xylene, total</u>
<u>ozone</u>	<u>ozone</u>	<u>1,1,1-trichloroethane</u>
	<u>formaldehyde</u>	<u>toluene</u>

Source: ACGIH, 2017 (See Informative Appendix J, Informative References).

- Meeting Participant Comments on the Design Comments are as follows
 - Adopt the convention of referring to design compounds, PM_{2.5}, and their design targets, as DA-68 has done.
 - This is an addendum - Will go out for public review in about 3 weeks.
 - You can download and comment.
 - The list is a minimum list of contaminants; one can add additional compounds.
 - The value of a gas-filter efficiency, E_f , has to be stated from testing.
 - There is concern that 0.107 ppm of ozone is a concentration regulatory exposure limit. The value has been reduced from 75 ppb to 70 ppb.
 - Full committee (62.1) will be voting today (24 June) to reject the Comment.
 - Gemma: Requested that the Members be provided with the TSD (Tech Support Document).
 - Jensen: Indoor Air Quality for low-energy has several compounds that are listed. The TSD/Table did not. Many compounds were from European study. Request to look at this list.

8. Research (11:05)

RTARs:

- TC2.3 has a new RTAR proposal entitled

“Determination of occupant-related indoor air pollution loads considering the effects of the use of consumer products”

- RTAR Development
 - Lead Author: [Chang-Seo Lee](#)
 - Co-contributors (listed on current RTAR): [Tompkins](#), [Listvan](#), [Ptak](#)
 - Co-contributors (with recent interest): [Dennison](#)
- Kathleen Owen is the TC 2.3 Research Subcommittee Chair

Executive Summary of the Current Draft of RTAR

With increased use of various consumer products containing multiple anthropogenic chemicals, the indoor air pollution loads associated with occupants has become different from conventionally considered human bioeffluents. **This study is to determine occupant-related pollution loads considering both bioeffluents and off-gassing from the post-use of general consumer products through chemical and perceived indoor air quality measurements.** This RTAR would provide fundamental information for ventilation design (both VRP and IAQP) and improvement of indoor air quality (IAQ).

Concerns with the Current Draft of RTAR

Charlie: States that in its present form, there is current limited appeal, because the study can vary so widely. Human bioeffluents can vary widely. Need to provide us with direction on how to handle these compounds.

Gemma: Does this RTAR concern individual and multiple chemicals concurrently or both? Does this RTAR address particulate matter (paper mentioned by Scott)?

Elliott: Seeking enlightenment: Consumer products can be confounding with personal care products. Which type of products – consumer or personal care – will be studied? Seeking clarity on compounds application.

Jim: RTAR did not identify compounds; confused on whether this RTAR is a chamber study or a field study or both. Request is made to clarify this matter.

Scott: Does this RTAR include VOCs from “scents”?

Jeff: Concern is “subjective evaluation”. The panel of people may be too subjective.

Barney: Needs clarification in the body; VRP: The CFM data in the standard dates back to the 1930s.

The ASHRAE MOP states that a TRG *cannot* support research (See Figure A-3 in the Appendix herein). Therefore, the TRG4 can vote to make a recommendation (a) to the RAC Liaison for Section 4, and (b) for TC 2.3 or SSPC 62.1 to sponsor the research.

- TRG4.IAQP has a **new RTAR** proposal entitled

“Evaluation of Indoor Air Contaminants with respect to Development of Revised Design Compound List”

- **RTAR Development**
 - Lead Author: **Jim Dennison**
 - Co-contributors (listed on current RTAR): **None**
 - Co-contributors (with recent interest): **Gemma Kerr, Dean Tompkins**

Executive Summary (from current draft of RTAR)

The research will include a review of literature on indoor concentrations of contaminants in non-residential structures, guidelines on acceptable concentrations, and toxicological **information on compounds that warrant consideration for a revised list of 62.1 IAQP Design Compounds with pertinent reports for committees to re-evaluate the Design Compound list.**

Discussion: **Jim:** Strongly desires to avoid timing matters (insufficient time) that were involved in the selection of the current 62.1 DC list. For example, the insufficient time lead to concerns as follows: Should a CREL for a given DC be the most applicable REL? Also, the List should be a well-supported document.

Actionable Task(s):

- Formal Vote
Motion to: **Have the TRG4 sponsor the RTAR entitled “Evaluation of Indoor Air Contaminants with respect to Development of Revised Design Compound List”**
- Motion by: **Elliott**

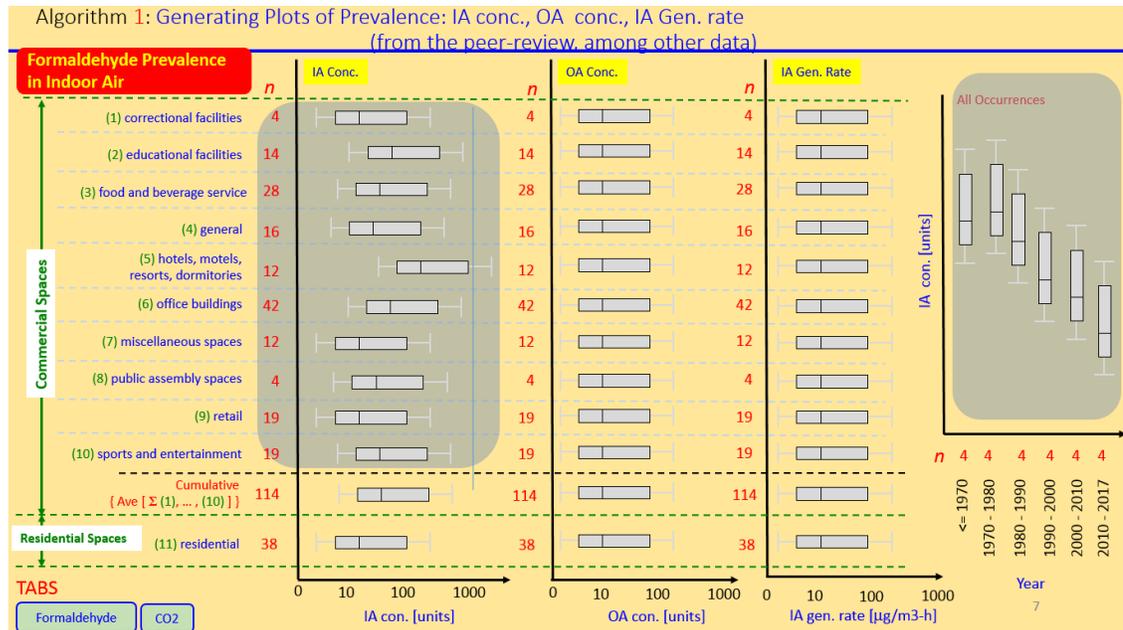
2nd-ed by: Charlie
 Discussion: We should have had this the last 40 years (Charlie) if not 5 (Barney) years.
 Jim: Timing matter – We need to move fast: GOAL: Let’s get the first RTAR approved by RAC(!). The content of the documents be well-developed.
 Marwa: Seek co-sponsorship by the TC 2.3 and 62.1.

NOTE: The ASHRAE MOP states that a TRG *cannot* support research (See Figure A-3 in the Appendix herein). This knowledge was learned after the (Houston) Meeting; therefore *after* the Vote here was taken.

Voting Tally:
 For: 12; Against: 0; Abstain: 0; Absent: 4; Total: 16
 Motion: **Passed** [12 > 8 (= 1/2 x 16)]

Actionable Task(s): Seek individuals to participate in the co-authorship of this RTAR
 Co-Authors: Elliott, Marwa, Gemma

- 9. Tool (Software) Development Initiative: (11:25)
 - o Storyboarding and features a new initiative of a DC selection tool/software/ for use by the TRG4.IAQP and Research & Education Subcommittee of Std. 62.1.
- NOTE:** This selection tool is not a tool to solve the VRP or IAQP of Std. 62.1.



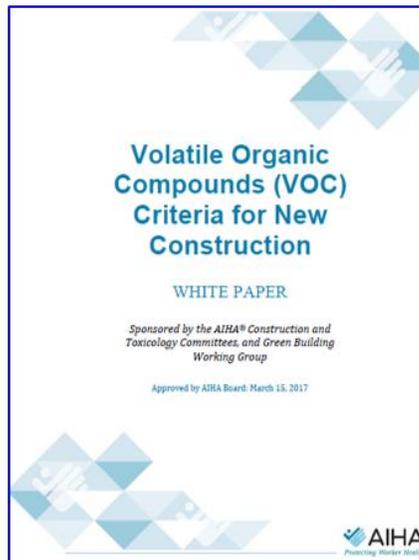
Actionable Task(s): Formal Vote
Motion to: Recognize the (software) **Tool** as useful by the TRG4.IAQP provided that the features of the **Tool** as described/presented are achieved
Motion by: Nick
2nd-ed by: Charlie
Discussion: Forthcoming upon observation of the **Tool**

Voting Tally:
For: 12; Against: 0; Abstain: 0; Absent: 4; Total: 16
Motion: **Passed** [12 > 8 (= 1/2 x 16)]

Actionable Task(s): Seek individuals to participate in a Working Group that would use, critique, and suggest useful content in periodic releases/versions of the **Tool**
Interested Working Group Members: TBD

10. Discussion of AIHA White Paper entitled “Volatile Organic Compounds for New Construction” (11:40)

- Sponsored by the AIHA Construction and Toxicology Committees and Green Building Working Group (Ed Light, champion)
- Approved by the AIHA Board: March 15, 2017



Actionable Task(s): Form a group to assess the topics in the White Paper that are relevant to the IAQP
Participants: Gemma, Nick, Marwa, Jeff, Jim, volunteer Erica

11. Continuation of TRG4.IAQP (11:52)

Actionable Task(s): Formal Vote: Administrative matter requested by ASHRAE of TRGs.
Motion to: Approve the existence and continuation of the TRG4.IAQP as an ASHRAE TRG
Motion by: Barney
2nd-ed by: Jeff
Discussion: none

Voting Tally:
For: 12; Against: 0; Abstain: 0; Absent: 4; Total: 16
Motion: Passed [12 > 8 (= 1/2 x 16)]

12. New Business (11:55)

- **A Multi-disciplinary Task Group (MTG) is forming focused on Health and Wellness**
 - The **focus** of the **MTG** will be to help to:
 - foster and expand internal and external organizational partnerships in this subject area;
 - work with:
 - organizations developing green building rating systems (e.g., ASHRAE bEQ; LEED; WELL; RESET, among others), and
 - research institutes and government agencies.
 - The **objective** of this coordination is to:
 - strengthen and improve the development and utility of these green building rating systems,
 - increase ASHRAE's knowledge and expertise in this emerging field, and
 - to become more effective in disseminating the results of research and practice in this field to ASHRAE members and others.
 - Dr. Zaatari is the official representative for SSPC 62.1.

13. Meeting Adjournment (11:58)

Actionable Task(s): Formal Vote
Motion to: Adjourn the TRG4 Meeting
Motion by: Nick
2nd-ed by: Elliott
Discussion: None

Voting Tally:
For: 12; Against: 0; Abstain: 0; Absent: 4; Total: 16
Motion: Passed [12 > 8 (= 1/2 x 16)]

Appendix

ASHRAE MOP

For convenience (in these Meeting Minutes), a few select and relevant excerpts from the latest revision (12 Dec 2018; post-Houston) of the ASHRAE **MOP** (Manual of Procedures) for Technical Committees (TC/TG/TRG) are provided below. The more interested reader regarding the **MOP** for Technical Committees is directed to the following link wherein the entire **MOP** is available for review -

https://www.ashrae.org/File%20Library/Technical%20Resources/Technical%20Committees/TC-MOP-Revision_Post-Houston_Fall-Meeting_-_Approved-Draft-20181212.pdf .

Figure A-1 contains an excerpt from Sec. 1.2.3 on the purpose of a Technical Research Group (TRG).

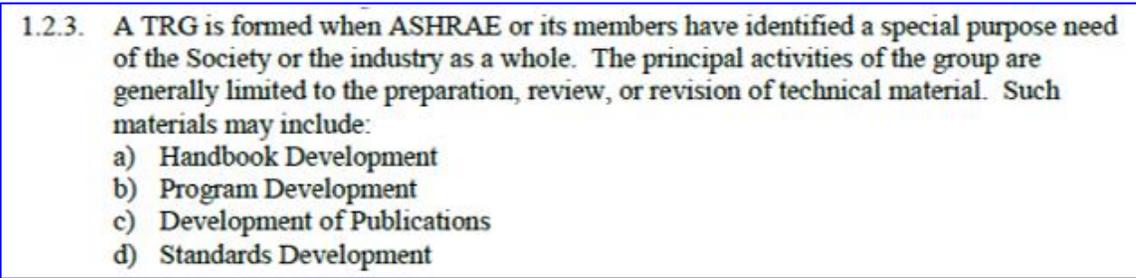
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- A screenshot of a document section titled "1.2.3. A TRG is formed when ASHRAE or its members have identified a special purpose need of the Society or the industry as a whole. The principal activities of the group are generally limited to the preparation, review, or revision of technical material. Such materials may include:" followed by a list of four items: a) Handbook Development, b) Program Development, c) Development of Publications, and d) Standards Development.
- 1.2.3. A TRG is formed when ASHRAE or its members have identified a special purpose need of the Society or the industry as a whole. The principal activities of the group are generally limited to the preparation, review, or revision of technical material. Such materials may include:
- Handbook Development
 - Program Development
 - Development of Publications
 - Standards Development

Figure A-1. Excerpt (as a graphic/screen image/) of Sec. 1.2.3 (Purpose of Technical Committee) taken from ASHRAE MOP (12 Dec 2018).

Figure A-2 contains an excerpt from Sec. 6.1.1 on Quorum for Voting and states that "... Quorum to conduct business meetings is established when the number of voting members present is four (4) or exceeds 1/2 of the number of total voting members of the committee, whichever is larger ..."

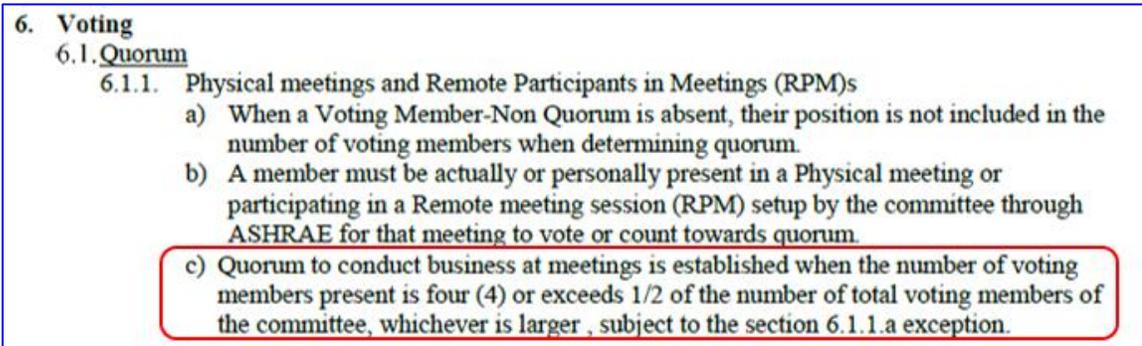
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- A screenshot of a document section titled "6. Voting" and "6.1. Quorum". Under "6.1.1. Physical meetings and Remote Participants in Meetings (RPM)s", there are three items: a) When a Voting Member-Non Quorum is absent, their position is not included in the number of voting members when determining quorum. b) A member must be actually or personally present in a Physical meeting or participating in a Remote meeting session (RPM) setup by the committee through ASHRAE for that meeting to vote or count towards quorum. c) Quorum to conduct business at meetings is established when the number of voting members present is four (4) or exceeds 1/2 of the number of total voting members of the committee, whichever is larger, subject to the section 6.1.1.a exception. Item c) is highlighted with a red border.
6. Voting
- 6.1. Quorum
- 6.1.1. Physical meetings and Remote Participants in Meetings (RPM)s
- When a Voting Member-Non Quorum is absent, their position is not included in the number of voting members when determining quorum.
 - A member must be actually or personally present in a Physical meeting or participating in a Remote meeting session (RPM) setup by the committee through ASHRAE for that meeting to vote or count towards quorum.
 - Quorum to conduct business at meetings is established when the number of voting members present is four (4) or exceeds 1/2 of the number of total voting members of the committee, whichever is larger, subject to the section 6.1.1.a exception.

Figure A-2. Excerpt (as a graphic/screen image/) of Sec. 6.1.1 (Quorum: Physical Meetings) taken from ASHRAE MOP (12 Dec 2018).

Figure A-3 contains an excerpt from Sec. 5.8 on research noting that TRGs *cannot* be responsible for (i.e., *sponsor* or *co-sponsor*) research, but rather "... report the need for research to ... the RAC Liaison ..."

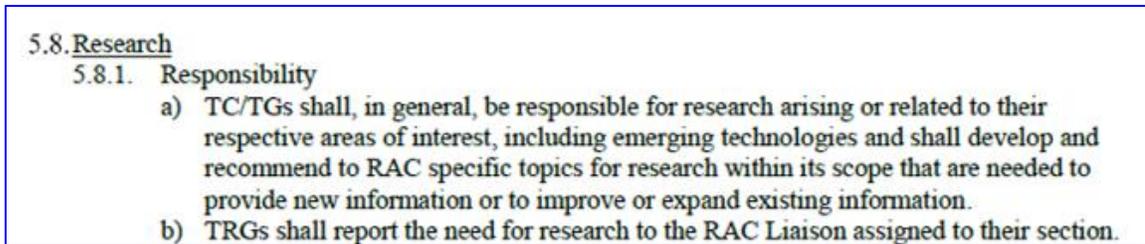


Figure A-3. Excerpt (as a graphic/screen image/) of Sec. 5.8.1 (Responsibility for Research) taken from ASHRAE MOP (12 Dec 2018).