

TC5.5 Ad Hoc group to support ASHRAE Epidemic Task Force

Date: April 30, 2020

DRAFT MINUTES

These are draft minutes and are not considered final until approved by vote of TC5.5

Called to order by Matthew Friedlander, Chair TC5.5, 13:00 central time

Chair noted that he called this meeting without the usual public announcement and notice due to urgency required by the current pandemic situation. Minutes of this meeting will be made public and a follow-up meeting with proper notice will be held later to provide TC5.5 oversight. As this is not a formally constituted group no votes can be taken. Unofficially this ad hoc group is referred to as the *TC 5.5 Epidemic Support Task Force* or the *TC5.5 ESTF*.

1. Appointment of Secretary

Adam Fecteau agreed to take notes.

2. Introduction of participants

See list of invitees (attached). Chair went through the list of attendees and each person introduced themselves with a few words about their professional background.

3. Approval or modification of agenda:

The agenda was accepted by consensus.

4. Work on TC5.5 Covid Guidance Document

Members of the ASHRAE Epidemic Task Force had provided extensive comments to the document "TC 5.5 Epidemic Support Task Force (TC5.5 ESTF) input to the ASHRAE COVID-19 Task Force". These markups and some responsive text by members of the drafting committee comprise "TC5.5 ESTF Covid-19 Guidance WD 20200430.docx" (available on BaseCamp <https://3.basecamp.com/3106353/buckets/8432838/uploads/2635186565>) and this was used as an exhibit and working draft in the meeting.

- a. Jay Kohler, Wade Conlan, and Dennis Knight spoke to their visions of the purpose and use of the TC5.5 Covid Guidance Document.
- b. Participants discussed elements of the document, some modifications were made, and actions as shown below were proposed.

5. Research Needs

There was no substantive discussion of this topic.

6. Assignments / Next Meetings

- a. Wade Conlan to provide segments of the draft Building Readiness Doc to the Chair for use by the TC5.5 ESTF. (Received and distributed 2020/04/30, available

on BaseCamp

(<https://3.basecamp.com/3106353/buckets/8432838/uploads/2635872759>)

- b. John Fisher and Tom Smith are to work in support of inclusion of re-entrainment guidance in the draft Building Readiness documents. They should liaise with Wade Conlan.
- c. John Fisher and Drake Erbe are to draft a new section of the TC guidance document providing practical guidance on evaluating in-situ ERVs for pandemic-safe operation. They should liaise with Dennis Knight. Manufacturers of ERV units are requested to make relevant graphics available.
- d. The drafting committee (Dieckmann, Erbe, Fisher, Simonson) to work with all possible speed to refine the document.
 - i. First priority: complete a guidance document including the evaluation advice in item 6.c as well as a general position; this is intended to be linked to the ERV section in the Building Readiness Guidance document.
 - ii. Second priority: preparation of FAQs. It is intended that the FAQs will not need to be entirely self-supporting since the main guidance document will be available to provide context and general guidance.
- e. No ESTF meetings were scheduled at this time. TC 5.5 will next meet on May 11, 2020, 13:00 – 14:30 eastern time.

Meeting was adjourned at 14:48 central time.

Minutes prepared by Adam Fecteau and Matthew Friedlander

Exhibit 1 - ASHRAE Code Of Ethics

Exhibit 2 - List of Invitees and Attendees

Exhibit 3 – working draft of TC5.5 ESTF Guidance document is available on Basecamp

<https://3.basecamp.com/3106353/buckets/8432838/uploads/2639127750>

Exhibit 1 - ASHRAE Code Of Ethics

(Approved by ASHRAE Board of Directors January 30, 2013)

1.140.001.1 As members of ASHRAE or participants in ASHRAE committees, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.

A. Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.

B. Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources.

C. Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.

D. We shall act with care and competence in all activities, using and developing up-to-date knowledge and skills.

E. We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.

F. The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.

G. Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.

H. Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.

Exhibit 2 - List of Invitees and Attendees

Present?	Name	Affiliation	Contact
YES	Matthew Friedlander	RenewAire	mfried@renewaire.com
YES	Aaron Bentley	FläktGroup	aaron.bentley@flaktgroup.com
YES	Adam Fecteau	Aldes	adam.fecteau@aldes.com
YES	Brandon Damas	HTS	(Brandon.Damas@hts.com)
YES	Carey Simonson Ph D P. Eng.	U of Saskatchewan	(carey.simonson@usask.ca)'
NO	Chris Check	Greenheck	chris.check@greenheck.com
NO	Chris Stone	AHRI	cstone@ahri.net
NO	David McDonald	NovelAire	dmcdonald@novelaire.com
YES	Dennis Knight ¹	Whole Building Systems	dknight@wholebuildingsystems.com
YES	Drake Erbe ²	Airxchange	drakeerbe@airxchange.com
NO	Eric Erdman	Greenheck	Eric.Erdman@greenheck.com
YES	Jay A Kohler ³	(ret.)	(jkohler9@comcast.net)
YES	John Dieckmann	(ret.)	dieckmannj@comcast.net
YES	John Fischer	SEMCO	john.fischer@flaktgroup.com
NO	Ken Mead	CDC	kcm3@cdc.gov
YES	Kristin Sullivan	Trane	kristin_sullivan@trane.com
NO	Larry Schoen	Schoen Engineering	larry@schoenengineering.com
YES	Larry A Smith	LI Hvac	larrys@li-hvac.com
YES	Marc Tardif	Innergytech Inc	(tardifm@innergytech.com)
NO	Mo Afshin		mj.afshin@gmail.com
NO	Nicole Lantonio	AHRI	NLantonio@ahrinet.org
YES	Nick Agopian	RenewAire	napopian@renewaire.com
YES	Rick Herman	UMN	herma015@umn.edu
YES	Roland Charneux	Pageau Morel	(rcharneux@pageaumorel.com)
YES	Richard Taft	Airxchange	RichardTaft@airxchange.com
NO	Roger Lautz	AEI Engineering	rlautz@aeieng.com
YES	Ronnie Moffitt	Trane	(rmoffitt@trane.com)
NO	Scott Laurila	Greenheck	Scott.Laurila@greenheck.com
NO	Tom Rice	SEMCO	thomas.rice@flaktgroup.com
YES	Tom Smith	3Flow	tcsmith@3flow.com
YES	Vijaykumar	Aerfil	vijay@aerfil.com
YES	Wade Conlan ⁴	Hanson, Inc.	WConlan@hanson-inc.com

¹ VP ASHRAE Board of Directors, Chair Technology Council, corresponding member ASHRAE Epidemic Task Force

² Chair ASHRAE 90.1

³ Chair ASHRAE Technical Activities Committee, corresponding member ASHRAE Epidemic Task Force

⁴ Chair ASHRAE Environmental Health Committee, Director-at-large, corresponding member ASHRAE Epidemic Task Force

Exhibit 3 – Written statement from R Vijaykumar, Aerfil

Vijay prepared this statement for use in the meeting, but was not able to attend.

I am not sure about the specifics of the HVC Engineer's concern. So my short take is from what I think you are looking for as a consensus response. My apologies if otherwise. Also, full disclosure. My expertise is particle mechanics, filtration and clean air for enclosed spaces and not energy wheels. So please take my views strictly from the point of view of particle behavior:

- From everything I know and have read, some return of exhaust air to the inlet is unavoidable. Usually these are very small as noted in the attache paper. Particles, both viable and inert, will be exposed to the inlet air in a similar proportion and could become re entrained.
- Virus is typically in the 100 nm size range. Typically particles of this size are very difficult to dislodge once collected.
- Some or all of these virus may be included inside larger, either due to high humidity or moisture, i.e., they could be encased in droplets which are then collected on the exhaust side. In this case, most likely the moisture will be adsorbed by the dessicant leaving dry virus, which will be hard to dislodge. Some the small fraction of the collected droplets will be large enough to be carried to the inlet side. The paper also concludes the same. In this case, a good fraction of the moisture will be most likely adsorbed in the dessicant leaving an even smaller fraction of larger virus entrained droplets to become re entrained in the air stream.
- Droplets and particles larger than 10000 nm settle out rather quickly, (0.6ft/min or more), which in most HVAC systems will be in the ductwork and before it reaches the occupied space.
- A reasonably high efficiency filter (>95% MPPS) and good air flow rates will take care of any potential virus leaks past the wheel, and also protect the clean side duct work. Contrary to what many in ASHRAE are recommending, the efficacy of MERV class filters are not measured below 300 nm. Extrapolating the data curves for a few filters show even high MERV filters to be less than 20% at 100nm.

In summary, from a particle point of view, virus re entrainment from an energy wheel, is possible but may not be as big a contributor to potential harm than leaks in building envelope, doors and windows, elevators, etc, and most of all from transmission between infected people.

Matt, hope this helps. Feel free to contact me if you have any questions. As an aside, thanks for sharing the ASHRAE position paper. As a matter of caution, they seem to use aerodynamic size and particle size loosely. For water droplets, they are the same; it can be quite different for other morphology or material. I have pointed this out before but have not received any response.