MEETING MINUTES

Meeting Minutes reported by Traci Hanegan, TC 9.6 Secretary

1) TC called to order
   a) Introductions were made by attendees.
   b) Agenda and Sign-in sheets distributed
   c) Roll call - members present confirmed: 11 of 16 quorum voting and 2 non-quorum members present – quorum reached
   d) Corresponding members present 36, including 11 noted as PCM
   e) Guests present - 12
   f) YEA members – 6
   g) All Handouts, Agenda, Meeting Minutes (Draft and Final) Sign-in sheets, & subcommittee reports will be posted to the TC website: http://tc96.ashraetcs.org

2) Chair’s Report
   a) Members can request to become Provisional Corresponding Members by emailing Tara Thomas at TThomas@ashrae.org. Include your membership number in your email. New Provisional and Corresponding Members can be added at anytime. You can also go to the ASHRAE website and select Technical Committees under the Standards and Technology Tab. The next webpage to come up has a link to Join a TC.
   b) Subcommittee chairs to send their minutes to Secretary Traci Hanegan within 2 weeks of the meeting.
   c) The committee roster is very large and we are going to begin rolling off CMs who are not involved.

3) Minutes of Previous Meeting – T Hanegan
   a) Meeting Minutes from Las Vegas were distributed on line and via website prior to the meeting. No changes. Motion to approve the minutes by Paul Ninomura. Seconded by Nicolas Lemire. Motion passed 9-0-1 Ken Mead did not vote as he stepped out for a moment.
   b) Jeff Hardin noted that liaisons can also apply for voting membership.

4) Vice Chair Comments – Ron Westbrook
   a) Thank you to Mike for service as Chair.

5) Roster Changes:
   a) We introduced our new corresponding members.
   b) The leadership transition plan for the committee that will take effect on July 1, 2017 includes:
      i) Ron Westbrook, Chair
      ii) Traci Hanegan, Vice Chair
      iii) Nicolas Lemire, Secretary
   c) New voting members beginning July 1, 2017:
      i) Pavel Likhonin
      ii) Eric Granzow
      iii) Ron Westbrook
   d) Voting members Mike Meteyer, Bob Cox, Zied Driss, and Sheldon Jeter will be rolling off July 1, 2017
   e) Non-quorum members Michael Keen and Vorasen Leewattanakit will be rolling off July 1, 2017.
   f) Subcommittee chairs typically serve 2-3 years and should be grooming their replacement the last year.

6) Sub-committee Reports (see attached subcommittee meeting minutes where available in addition to notes below)
a) Energy – David Eldridge. Did a joint meeting with the Water subcommittee today. TC2.8 wants to do an RTAR to support the zero-energy design guide. Research money to help fund a design guide. Design guide is a second priority behind direct research. You can get priority 1 if you have matching money.


c) Programs – Ron Westbrook


e) Research – Ken Mead

f) Infectious Diseases – Traci Hanegan

7) Webmaster – George Augustini

a) The new website address is http://tc096.ashraetcs.org

b) To comply with ASHRAE policy, any email address should be an ASHRAE alias. If you are a subcommittee chair, please follow that process and get an alias.

c) Possible session in Chicago and George will walk us through the new website and what information we can submit to make it more effective and useful for everyone.

8) ALI – Dan Koenigshofer

a) The class was held yesterday and had about 25 attendees. Sara Boyles taking over for Marty Craft. NIH – Farhad’s group had him do a 6-hour class for them. 44 people signed up within an hour of posting it with space for only 25. ASHRAE provided a copy of the manual to all the students.

b) Dan taught a 3-hour class on Sept. 19 as a webinar. Mike Meteyer noted we could email and post on our website what the time is. Usually about 25 people attend the webinars from around the world.

c) Trying to better integrate ALI into this process.

9) Environmental Health – Erica Stewart

a) Meeting is tomorrow morning.

b) Open call for indoor air 2019. Looking for peer review of abstracts that are submitted. Erica will advise if relevant articles come up.

c) Position document committee was appointed. 5-8 people. Ken Mead and Erica Stewart from 9.6. Erica will ask if this can be a cognizant committee with ex-officio representation. Other people are Ygi Oli, Russ Olmstead, Jovan Patalic, Larry Shoem, Chandra Sakar, and Dr. Zirami Sultan. Most of these people participated in the last revision. Might change title, purpose, and scope. Currently – talked about other non-traditional airborne diseases being a part of this. Infectious diseases transmitted via an indoor route. Maybe Legionella should be included in this since you get it from aerosol.

10) Liaison Reports – Jeff Hardin

a) Std. 170. FGI guidelines 2018 published this year by the end of the year. Our next edition will be 2017 for standard 170. Sept. 14-15 in Atlanta is next interim meeting. Priority goals are to wrap up addendum N and get addenda q and p incorporated. Mike M. commented that the Std. 170 filter work group should also go in. SSPC 55, 90.1, and 62.1 and filtration work group comments will go in. AAMI humidity requirements discussions will be going on. Change proposals for alternate OA compliance for OA calcs, deletion for pharmacies. Contaminants for IAQ will be addressed. Start talking about the 2021 edition.

b) Std. 189.3. Mike Sheerin. Standard was published a couple of months ago. Not in bookstore yet, but electronic is available. Next steps will be discussed tomorrow. Coord. With 189.1, which is publishing next and that will be included in the IGCC codes will incorporate. Mike – track in Chicago on standards, guidelines, and codes.

c) Std. 188. Erica. Meets on Tues and Wed. Also doing work outside of face to face meetings. Guideline 12 - very last round of comments here and voting to publish. They are very close. After that they are in continuous maintenance on 188.

d) Std. 90.1

e) Std. 55. Zach Poots. Removes comfort from TPS on standard 170. Republication in the next couple of months. Working on practical applications. A lot more examples coming up to better understand and apply the standard to your spaces. Rodrigo has a session seminar 40 on Tuesday around 11. Presentation on thermal comfort and
healthcare in terms of some of the challenges and proposing to look at whether or not there is some kind of measurement, like heartrate, that they can start using to better eventually get to addressing some of the challenges of trying to use 55 in healthcare spaces. History of what’s out there today and suggest what to do to move forward. Planning to resubmit a technical paper in August.

f) Std. 62. Erica Stewart gave an update. Member of education and research subcommittee. Responsible for the IAQ procedure and ventilation rate procedure. Talk of contaminants of concern and what they mean, which one should be on a list, what should be the limits and how are they used. Coord with 52.2 and 145.2 gaseous particle filtration. Contaminants of concern are to validate the filtration method, not to propose a level as a safe or healthful thing for occupants. Erica will propose a Chicago workshop to demystify these and clarify this. Now they say minimize adverse health effects, but this is not fully a health based thing. Mike Meteyer noted that they should list us as a cosponsor and keep Ron Westbrook in the loop. IAQ guidelines will be ideas above code minimum to get towards promoting health, so that’s next up.

New standard for filtration ISO 61890. New method relates to filter efficiency to bm2.5, bm10, which is basically the outside air. Been approved and published in 2016. Planning to adopt in the US after it goes through certain procedural steps.

g) Another session in Chicago about air cleaners and the claims being made. Manufacturers on the edge of claiming a health benefit, without regard to secondary contaminants. Maybe we should co-sponsor that.

11) New Business
   a) MTG update from Roger Lautz. Kishor sent 6 questions to the TC reps for the MTG. Roger reviewed his responses with the committee and asked for feedback before sending this back to the MTG. Forum on ventilation effectiveness is being proposed. Several people gave Roger some ideas on the one thing to have the MTG achieve.
   c) Report on S170 Study/CORP-3 by Roger Lautz and Fred Betz and Clemson. June 30 is the deadline to submit articles.
   d) OR Airflow Modeling presentation by Kishor Khankari

12) Meeting adjourned.
MEETING MINUTES

Meeting facilitated by David Eldridge, TC9.6 Energy Subcommittee Chair & Eric Granzow, TC 9.6 Water Subcommittee Chair

1) Call to order 1:00 PM
   a) Agenda and Sign-in sheets
   b) Introductions
   c) YEA members
   d) All Handouts, Agenda, Meeting Minutes (Draft and Final) Sign-in sheets, & subcommittee reports can be found on the TC website: http://tc96.ashraetcs.org

2) Minutes of Previous Meeting – see TC website

3) Standards Reports
   a) Water:
      i) SSPC188 Legionellosis: Risk Management for Building Water Systems – Eric provided this
      ii) Guideline 12
   b) Energy:
      i) 90.1 – DSE to get contacts from Jeff Hardin, Tim Pegleu
      ii) 189.3 liaison reports from Mike Sheerin – published.

4) Research – no active projects for water or energy subcommittees
   a) Potential projects?
   b) Mike: publication ideas – case studies, new technologies. Guidebook by TVVL. Seminar 47 talking with Frank. Wednesday Workshop. Looking for article or contributions. 2-years. Want practical.
      i) REHVA journal first – want some articles as a starting point. Guidebook.
      iii) Frank, Kurt M. Can send the journal article.
      iv) Dave Schurk with Carrier. Has an SCE project to retrofit adiabatic condensers.
   d)

5) Society Liaisons

6) TC Liaisons

7) Programs
   a) Seminar 47: Zero Energy Healthcare Buildings: Current Status and Future Efforts, Tuesday, June 27 3:15-4:45pm, Long Beach Convention Center Second Floor 203AB
ASHRAE Committee 9.6 Water+Energy Subcommittee  
Health Care Facilities  
Sunday, June 25, 2017  Long Beach, CA  
Renaissance Floor 1, Room Pike 1  
b) Workshop 9: How to Design, Construct and Operate Net Zero Hospitals AND Save Money Wednesday, June 28 9:45-10:45am, Long Beach Convention Center Second Floor 203AB  
i) Tech Paper Session 1 – first year calibration of a design energy model at an MOB.  
ii) Kishor presentation this morning, get a recap at the main TC.  

8) New Business  
a) Water:  
i) CDC report:  
ii) CDC Toolkit: Updated June 5, 2017  
https://www.cdc.gov/legionella/  
iii) ASHE Monograph: Water Management in Health Care Facilities: Complying with ASHRAE Std 188  
b) Energy:  
i) Prior meeting topic – AEDG case study? Memorial Hermann was mentioned – get David Schurk.  
ii) Prior meeting topic – FGI ENERGY STAR 75 target/requirement – Walt reports that it did not.  
iii) “Nearly” NZE Healthcare guide – ASHRAE/DOE may still produce a 100% AEDG, although this is not on the current development slate. Needs a champion if we are to work with REHVA on a publication.  
iv) Water audit results, findings, tips – could be a potential program for Chicago? I can get a couple of speakers for a seminar. – send a survey question to CM to find more water audit findings. DSE to follow up with Exxon / Traci  
v) MBCx / FDD was also a potential interesting topic. – Roger Lautz, Travis, Ascension, CHS. Copper Tree vendor. Get them tonight.  
vi) Subcommittee topic – interested to have EIA present on how they developed the hospital end-uses provided with CBECIS report. Contrast with energy audit findings, DOE reference building models. Could have a web meeting.  

Chicago schedule – give George from SSR to present on web updates, how to use. Take the handbook slot.  

9) Adjourn
TC 9.6 Handbook Subcommittee Meeting
(2019 Applications – Health Care Facilities)

Sunday June 25, 2017
10:30 - 11:30 – Pike 1, Renaissance Hotel

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<td>Welcome</td>
<td>P.Likhonin</td>
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<td>2</td>
<td>Self introductions and Sign In Sheet</td>
<td>All</td>
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<td>3</td>
<td>Review Roster/Subcommittee Members Present; Contributing members vs attendees</td>
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<td><strong>Working Session</strong></td>
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<td>7</td>
<td>Discussions/New Business</td>
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<td>8</td>
<td>Adjourn/Next Meeting</td>
<td>P.Likhonin</td>
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**Process and Schedule:**

- Working Session
- Schedule makes it mandatory that Official Chapter shall be submitted in 2018 to HBC. N.Lemire wants the TC to vote on it in January 2018 in Chicago.
- Review process will be:
  - Review and comment period (2016-2017) – **Final work shall be submitted to voting members following Long Beach.**
  - Final revision (Fall 2017)
  - Approval of Final Revision and vote (January 2018)

- Basefile of 2015 available. Soft copies available in Subcommittee meeting. **WE WILL BE USING THE NEW ASHRAE AUTHORING PORTAL FOLLOWING THE MEETING IN LONG BEACH.** We will merge all revisions so far and put the “new” basefile” shortly after Vegas.
- List of ideas to be discussed and included (or not) for 2019 version: See table.
Assignments:

- Handbook chapter to be sent to TC 9.6 members for review and comment following Long Beach meeting. Final work will be submitted in Long Beach. Members will be given 1 month to review and comment.

Meeting Minutes:

Introductions: 17 people signed in, but more came in in the middle of the meeting.

1. Schedule:
   a. Final chapter revision will be given to TC members for review following Long Beach Meeting. Members will be given a month to submit comments.
   b. Incorporate comments for 2018 Chicago meeting
   c. TC-9.6 to vote on final handbook chapter in 2018 Chicago meeting.

2. Reviewed Assignments: Completed vs. Outstanding
   a. Comparison of Terminology is complete
   b. Bio-containment section is completed.
   c. Pharmacy Updates are completed.
   d. Review of References is completed.
   e. Flow of Chapter: Completed.

3. Working Session:
   a. Prioritization list for designing health care facilities has been added to the chapter, and language has been updated.
      i. Can we site an ALI course in the handbook?
      ii. Dan K. found a published article that we can site the 6 elements.
   b. An excerpt of Table 7.1 from ASHRAE 170 has been added to the handbook and language has been updated.
   c. Ken M. explained the Biocontainment section. Language has been added to the section explaining the figure. Pavel to add Ken’s figure of a sample bio-containment unit.
   d. USP 797, and 800 updates by Ken with recent and upcoming changes.
      i. 797 will be going away, but still in use, so 797 will be included in this handbook, but can be removed in future.
e. Need to reference USP 795, if it has specific requirements.
f. Mike M. to send Pavel a list of voting members to send the Handbook chapter to.
g. Mike M. suggested sending reminder emails weekly to submit final comments on handbook chapter.
h. Mike M. and Pavel Discussion on OR options for Return.
   Pavel to add a section describing different options.
4. Meeting Adjourned.
TC9.6 Infectious Diseases Subcommittee
Meeting Minutes
Long Beach Annual Meeting
Sunday, June 25, 2017 8:30-10:30am

1. Traci Hanegan, Chair. Ken Mead, Vice-Chair. The meeting was attended by 42 professionals including 6 YEA, 15 guests

2. Refresh on Purpose and Direction. See past meeting minutes and agendas for a summary on purpose/direction.

3. Updates/Lessons Learned on various infectious diseases. See copy of Agenda for detailed information on topics reviewed.
   a. Mike Meteyer noted a new publication by the CDC (maybe add to FAQ) on what to do with different IDs.
   b. CDC Toolkit on Legionella has been recently updated and there is also an ASHE Monograph. Water/Energy subcommittee has links to these items in the minutes and George Augustini is adding these to the website.
   c. Ken Mead noted that NSF, as of April 15, 2016, no longer allows certification of Class 2 Type A BSCs with canopy connections unless the BSC has an alarm for the canopy installed.
   d. Ken Mead shared a document called “Air Sampling for Clostridim Difficile in Healthcare Facilities”. A PhD student is looking for volunteer facilities to permit him to conduct this research.
   e. Discussion on probiotic cleaners. Erica Stewart mentioned two current studies on surface disinfectants that are comparing probiotic cleaners and bleach. HAI rates are being tracked in a control study. Two hospitals are in Italy and one is in Denmark. Final results are not available yet, but initial indicators are that HAI rates are much lower with the probiotic cleaners. There are obstacles currently to using these in the United States because they are not registered with the EPA. This study could help to overcome that obstacle.

4. It was suggested that this committee consider changing the name to Healthcare Associated Infections.

5. Transferring patients shown to contribute to spread between hospitals. Study involved C-Diff and tracking spread as patients moved from one hospital to another. Protocols discussed for what facilities are doing (ex. Masking patients) to mitigate spread as patients are transferred within a hospital, for example from ED to an All Patient room or to imaging. C-diff is not emitted from the respiratory tract. It is spread by direct contact and by aerosolized droplet nuclei. Previously cleaned surfaces can be re-contaminated from fomites settling out of the air.
   a. Facilities personnel play a large role in infection transmission as they move about the hospital performing repairs and maintenance tasks.

6. Hospital Microbiome Project published May 24, 2017 in Science Translational Medicine. The study, “demonstrates the extent to which the microbial ecology of patient skin and of hospital surfaces are intertwined and may provide context to future studies of the transmission of hospital acquired infections,” the authors conclude. More to come in future publications on patient outcomes tied into relative humidity.

7. Harvard Medical Center Healthcare Symposium Report from Traci. This Healthcare Symposium was held May 29-30, 2017 in Boston and as the first of its kind, bringing together professionals from the clinical side (physicians, epidemiologists) and from the design and construction side (consulting engineers, equipment manufacturers) to talk about healthcare acquired infections and the impact of the built environment on patient outcomes. Great discussion and ideas generated. A second Symposium is being planned to
continue the collaboration. A tentative date is May 9-10, 2018. Information about the 2017 and the 2018 Symposia are on Traci's LinkedIn page.

8. Poor Indoor Air Hydration (or dry indoor air) - Impact on patient outcomes. The subcommittee held a long discussion about the negative impact on patient outcomes from poor indoor air hydration, obstacles to getting humidification systems up and running properly (aim for RH 40–60%) in healthcare facilities, and a plan for moving forward. Ideas included producing publications regarding the justification for good indoor air hydration, humidifier design, commissioning, operations, and a certification standard.
   a. Please email Traci Hanegan (hanegan@coffman.com) if you are interested in assisting on one of the Task Groups listed below. Initial volunteers that stepped forward during or after the subcommittee meeting are listed, but more volunteers are anticipated. This is a great opportunity for corresponding members and provisional corresponding members to get involved.
   b. A Task Group consisting of Travis English, Maya Salabashera, Jonathan Flannery, and Ron Westbrook will work on a publication for Operations of humidification systems. Issues to be addressed include (but are not limited to) a justifiable timeline for humidity to be allowed to be out of range before taking action, preventative maintenance, and periodic testing of systems during times of non-use (similar to emergency generator testing).
   c. A Task Group consisting of Jeff Hardin will work on a publication for commissioning and a possible certification standard for humidification systems.
   d. A Task Group consisting of Dan Koenigshofer, Pavel Likhonin, and Rick Peters will work on a publication for design of humidification systems for healthcare facilities.
   e. A Task Group consisting of Traci Hanegan, Dr. Stephanie Taylor, and Burns Bradford, will work on a publication for the justification for good indoor air hydration.


10. A Task Group consisting of Traci Hanegan, Ken Mead, Roger Lautz, Dave Anderson, Tim Earhart, Jonathan Flannery, will work on a request to FGI and Standard 170 to make ante-rooms mandatory for Airborne Infection Isolation room.
Air Sampling for Clostridium difficile in Healthcare Facilities

**Purpose/Public Health Significance:** Healthcare acquired *Clostridium difficile* infection (CDI) is a significant burden to healthcare facilities and to the provision of effective care. In 2013 there were over 290,000 cases of CDI in the United States and incidence rates have increased significantly since 2002. While the transmission of CDI from contact with contaminated surfaces and other fomites is well understood, the potential for CDI transmission through aerosol pathways is not well evaluated. Previous studies in the United Kingdom have identified *C. difficile* sporadically in patient room air and in very low concentrations following toilet flushing, however studies have not been performed to determine if *C. difficile* is capable of aerial dissemination through a ward or facility wide and air sampling studies have not been conducted in US based healthcare facilities.

**Study Author:** Casey W. Cooper is a doctoral student at the University of Oklahoma Health Sciences Center and is an active duty Air Force officer with 13 years of service as an industrial hygienist. He has been a Certified Industrial Hygienist since 2012. David L Johnson is a professor of Occupational and Environmental Health at the University of Oklahoma and will advise/supervise Mr. Cooper for this study.

**Timeline:** This study will take place from July – September 2018. Specific dates can be arranged to meet the requirements of the participating facility. We will need patients diagnosed with CDI be present during the sampling. Access/collection of air and surface samples is requested for six, 2 day periods, approximately 4-6 hours each day. Air samples will be conducted during periods of greatest activity (daytime) when staff makes multiple room entries (i.e. meal times, bed changing, room cleanings).

**Methodology:** This study will utilize high and low volume biological air sampling systems. Air samplers will be placed in hallways and adjacent rooms. If allowed by the participating facility, samplers may be placed in the patient room. Samples will be collected for a period of up to 1 hour. Every effort will be made to minimize noise and other disruptions. Surface samples (i.e. swabs) will be collected from inside the patient room i.e. on and around beds, bathrooms, and used bedpans (if allowed by facility). To minimize patient disruption, these surface samples may be collected after patient discharge. Samples will be analyzed by culture for *C. difficile* at the Oklahoma University Health Sciences Center and sent to a 3rd party lab for genomic analysis (whole genome sequencing and/or pulse field gel electrophoresis).

**Support Requested:** Access to wards/hospital rooms/treatment areas where CDI patients are actively being treated. No physical contact with the patient is required for this study. The **sampling and analysis will be performed at no cost to the participating facility.**

**Publication of Results and Privacy:** A technical report with results will be provided to the participating facility. The study and results will be published in peer reviewed literature and in a doctoral dissertation. The name of the supporting facility and participating staff members will be kept anonymous (unless the facility or staff requests that their participation be disclosed). Personally identifying patient information will not be collected, used, or published in any way.

**Anticipated Outcomes:** We expect that *C. difficile* will be consistently collected during air sampling inside or near the patient room and with decreasing frequency as the distance of sample collection increases away from the patient, the patient’s room, and the patient’s bathroom.

**Contact Information:** Casey W. Cooper, Email: casey-cooper@ouhsc.edu Phone: 865-255-7938
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<td>Flannery, Jonathan</td>
<td><a href="mailto:jflannery@aha.org">jflannery@aha.org</a></td>
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<td>Foistad, Ted</td>
<td><a href="mailto:rfoistad@precisionairproducts.com">rfoistad@precisionairproducts.com</a></td>
<td>Precision Air Products</td>
<td>Corresponding Member</td>
<td></td>
<td></td>
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<tr>
<td>Forrest, Lubos</td>
<td><a href="mailto:lubos.forrest@honeywell.com">lubos.forrest@honeywell.com</a></td>
<td>Honeywell Int.</td>
<td>Guest</td>
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<tr>
<td>Gelstzne, Kelli</td>
<td><a href="mailto:kellig@berkeley.edu">kellig@berkeley.edu</a></td>
<td>UC Berkeley</td>
<td>Assistant Professor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granszow, Mr. Eric</td>
<td><a href="mailto:egranzw@specializedeng.com">egranzw@specializedeng.com</a></td>
<td>SES Engineers</td>
<td>Water Chair</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Guelds, Jason
Jguelds@aafrod.com
AAF
Guest

Gauzy, Mr. Arash
Guayrash@yahoo.com
Mazzetti & Associates
Corresponding Member

Galick, Mr. Robert W
bgulick@mazzetti.com
Mazzetti & Associates
Member

Hanegan, Mrs. Traci A
hanegan@coffman.com
Coffman Engineers
Secretary, CM, Infectious Diseases Chair

Hardin, Mr. Jeffrey M
jeffrey.m.hardin@usace.army.mil
US Army Corps Of Engineers
Standards Chair, Member

Heidel, David
david.heidel@uvdi.com
Ultraviolet Devices, Inc
Guest

Herrig, Ms. Lynda B
lherrig@newcomb-boyd.com
Newcomb & Boyd
Program Chair, Member

Hoodley, Rob
robert.hoodley@rogers.com
Aquace Associates

Hosken, Steve
Steve@cleanandscience.com
Clean & Science

Jeter, Dr. Sheldon M, PhD
sheldon.jeter@me.gatech.edu
Georgia Tech - School of ME
Member

Kapoor, Rajendra
Raj.rajkapoor@gmail.com

Kich, Debbie
debbie.kicy@carrier.utc.com
Carrier Corp

Koenigsboer, Mr. Dan, PE
dkoenigsboer@dewberry.com
Dewberry Engineers Inc
ALI Coordinator, CM

Lautz, Mr. Roger W., PE
rlautz@aceinc.com
Affiliated Engineers

Le, Lloyd
lle@phoenixcontrols.com
Phoenix Controls

Leach, Timothy
tleach@sternaire.com
Stern Air
Member

Lee, Linda, Dr.
lidic@agrous.org
American Green Technology
Chief Science Officer

Lee, William
lert@coffman.com
Coffman Engineers
Provisional Corresponding Member

Leewattanakit, Mr. Vorasen
vorasen@windchill.com
Windchill Limited
Member - Non Quorum

Lermaire, Mr. Nicolas
nlemire@pageaumorel.com
Pageau Morel & Assoc
Handbook Chair, CM

Leone, Michael
michaelleone@gmail.com
IFK
Member

Likhonin, Pavel
plikhonin@dewberry.com
Dewberry Engineers Inc
Corresponding Member

Mages, Stephanie
StephanieMages@aecom.com
AECOM
Guest

Martin, John
John.Martin@HDRinc.com
HDR
Mechanical Eng.

Mathur, Ashish
ashish.mathur@uvdi.com
UVDI
Corresponding Member

Mayne, Phil
phil@filterman3d.com
The Filter Man
Guest

McKinsey, Peter
pmckinsey@strionair.com
Strionair / Carrier

Jeff Gathmison
R P Haison
<table>
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<td><a href="mailto:MMcLaurin@Titis-HVAC.com">MMcLaurin@Titis-HVAC.com</a></td>
<td></td>
<td>Guest</td>
</tr>
<tr>
<td>Mead, Kenneth R, PhD, PE</td>
<td><a href="mailto:kmread@cdc.gov">kmread@cdc.gov</a></td>
<td>Center for Disease Control/NIOSH</td>
<td>Research Chair, Member</td>
</tr>
<tr>
<td>Meteyer, Mr. Michael S, PE LEED</td>
<td><a href="mailto:mmetyer@erdm.com">mmetyer@erdm.com</a></td>
<td>Erdm CNIB</td>
<td>Chair</td>
</tr>
<tr>
<td>Miller, Mr. Gary L, PE</td>
<td><a href="mailto:gary@cabcoinc.com">gary@cabcoinc.com</a></td>
<td>Engineered Air Balance Co Inc</td>
<td>Corresponding Member</td>
</tr>
<tr>
<td>Neu, Dylan</td>
<td><a href="mailto:Dneu@CDC.Gov">Dneu@CDC.Gov</a></td>
<td>CDC/NIOSH</td>
<td>Guest</td>
</tr>
<tr>
<td>Novosel, Darvao</td>
<td><a href="mailto:dhorosel53@gmail.com">dhorosel53@gmail.com</a></td>
<td>JCB</td>
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<tr>
<td>Pantelic, Jovan</td>
<td><a href="mailto:Pantelic@Berkeley.EDU">Pantelic@Berkeley.EDU</a></td>
<td>UC Berkeley</td>
<td></td>
</tr>
<tr>
<td>Paranhos, Frederic</td>
<td><a href="mailto:fredericparanhos@salux.com.br">fredericparanhos@salux.com.br</a></td>
<td>Abraza</td>
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</tr>
<tr>
<td>Parker, Thomas</td>
<td><a href="mailto:parkerph@smh.ca">parkerph@smh.ca</a></td>
<td>St. Michael's Hospital</td>
<td>Provisional Corresponding Member</td>
</tr>
<tr>
<td>Peters, Mr. Richard E, PE</td>
<td><a href="mailto:rps@ba-engineering.com">rps@ba-engineering.com</a></td>
<td>TBS Engineering</td>
<td>Provisional Corresponding Member</td>
</tr>
<tr>
<td>Piteca, Luca Alberto</td>
<td><a href="mailto:Lucapiteca@AICARR.org">Lucapiteca@AICARR.org</a></td>
<td>AICARR</td>
<td>Guest</td>
</tr>
<tr>
<td>Putnam, Mr. John M</td>
<td><a href="mailto:jputnam@techhealth.com">jputnam@techhealth.com</a></td>
<td>Environmental Dynamics Inc</td>
<td>Corresponding Member</td>
</tr>
<tr>
<td>Reckis, Eric P</td>
<td><a href="mailto:epcfepes@tsla.com">epcfepes@tsla.com</a></td>
<td>RSA LifeStruct</td>
<td>Mech. Eng.</td>
</tr>
<tr>
<td>Rim, Donghyun</td>
<td><a href="mailto:drim@psu.edu">drim@psu.edu</a></td>
<td>PSU</td>
<td>Provisional Corresponding Member</td>
</tr>
<tr>
<td>Salabasheva, Maya</td>
<td><a href="mailto:Maya.i.Salabasheva@KP.org">Maya.i.Salabasheva@KP.org</a></td>
<td>KP</td>
<td></td>
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<tr>
<td>Scheir, Robert</td>
<td><a href="mailto:dr.bob@steral-air.com">dr.bob@steral-air.com</a></td>
<td>Steral-Aire</td>
<td>Member</td>
</tr>
<tr>
<td>Sheerin, Michael</td>
<td><a href="mailto:michael.sheerin@tlc-eng.com">michael.sheerin@tlc-eng.com</a></td>
<td>TLC Engineering</td>
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<tr>
<td>Shen, Lu</td>
<td><a href="mailto:lshen31@gatech.edu">lshen31@gatech.edu</a></td>
<td>GA Tech</td>
<td>Student Member</td>
</tr>
<tr>
<td>Smith, Harold, PE</td>
<td><a href="mailto:harold.smith@stonybrookmed.edu">harold.smith@stonybrookmed.edu</a></td>
<td>Stonybrook Medicine</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Sore, Marc</td>
<td><a href="mailto:marc.sore@greenbeck.com">marc.sore@greenbeck.com</a></td>
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<tr>
<td>Stewart, Ms. Enica</td>
<td><a href="mailto:erica.stewart@kp.org">erica.stewart@kp.org</a></td>
<td>Kaiser Permanente National EH&amp;S</td>
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<tr>
<td>Supano, Dr. Paul F</td>
<td><a href="mailto:astro@anadispring.com">astro@anadispring.com</a></td>
<td>American Dental Association Liaison</td>
<td>Corresponding Member</td>
</tr>
<tr>
<td>Surminshi, David</td>
<td><a href="mailto:DavidS@PriceIndustries.com">DavidS@PriceIndustries.com</a></td>
<td>Price Industries</td>
<td>Product Manager</td>
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<tr>
<td>Tanggaard, Jesper</td>
<td><a href="mailto:jesper.tanggaard@sweco.clic">jesper.tanggaard@sweco.clic</a></td>
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<td>Thatipana, Deeply</td>
<td><a href="mailto:thatipana@mail.uc.com">thatipana@mail.uc.com</a></td>
<td>University and Cincinnati</td>
<td>Guest</td>
</tr>
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<td>Thompson, Ryan</td>
<td><a href="mailto:Ryan.thompson@TSI.com">Ryan.thompson@TSI.com</a></td>
<td>TSI Inc.</td>
<td></td>
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<td>Thomsen, David</td>
<td><a href="mailto:David.Thomsen@Providence.org">David.Thomsen@Providence.org</a></td>
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<td>Tome, Mr. Mark A, PE</td>
<td><a href="mailto:mark.tome@mail.ashrac.org">mark.tome@mail.ashrac.org</a></td>
<td>CESI</td>
<td>Webmaster, Member</td>
</tr>
<tr>
<td>Paul Supan</td>
<td><a href="mailto:astro@mindspring.com">astro@mindspring.com</a></td>
<td></td>
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<tr>
<td>Vogt, Kristy</td>
<td><a href="mailto:vogelk@ada.org">vogelk@ada.org</a></td>
<td>American Dental Association</td>
<td>Provisional Corresponding Member</td>
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<td>Welu, Steve</td>
<td><a href="mailto:gleencleanair@adie.com">gleencleanair@adie.com</a></td>
<td>Glen Clean A.V</td>
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<tr>
<td>Westbrook, Mr. Ronald L, PE</td>
<td><a href="mailto:westbro@upstate.edu">westbro@upstate.edu</a></td>
<td>SUNY Upstate Medical University</td>
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<tr>
<td>Westbrook, Rn</td>
<td><a href="mailto:westbro@upstate.edu">westbro@upstate.edu</a></td>
<td>SUNY Upstate Medical University</td>
<td>Director of Facility Operations</td>
</tr>
<tr>
<td>Wilson, Laurence V, P.E.</td>
<td><a href="mailto:Laurence.Wilson@SmithgroupRR.com">Laurence.Wilson@SmithgroupRR.com</a></td>
<td></td>
<td>Corresponding Member</td>
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<tr>
<td>Witham, Dave</td>
<td><a href="mailto:DaveW@uvdi.com">DaveW@uvdi.com</a></td>
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<td>Tyler Anderson</td>
<td><a href="mailto:tyler.anderson@chemengwa.com">tyler.anderson@chemengwa.com</a></td>
<td>Guest</td>
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<td>Mikhail Fuks</td>
<td><a href="mailto:mikhael.fuks@p2seng.com">mikhael.fuks@p2seng.com</a></td>
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<td>John Aykroyd</td>
<td><a href="mailto:John.Aykroyd@NCH.com">John.Aykroyd@NCH.com</a></td>
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<tr>
<td>Jason Hasiska</td>
<td><a href="mailto:jhowska@fadbcoinc.com">jhowska@fadbcoinc.com</a></td>
<td>Guest</td>
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</tr>
<tr>
<td>Walt Veron</td>
<td><a href="mailto:waltervc@mazzetti.com">waltervc@mazzetti.com</a></td>
<td>Guest</td>
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<tr>
<td>John Carter</td>
<td><a href="mailto:dcartec@applwind.com">dcartec@applwind.com</a></td>
<td>CAP /Guest</td>
<td></td>
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<tr>
<td>Dan Mason</td>
<td><a href="mailto:dmason@bioclimatic.com">dmason@bioclimatic.com</a></td>
<td>Guest</td>
<td></td>
</tr>
<tr>
<td>Patrick Walker</td>
<td><a href="mailto:Patrick.walker@Autora.org">Patrick.walker@Autora.org</a></td>
<td>Guest</td>
<td></td>
</tr>
<tr>
<td>Ehsan Mousavi</td>
<td><a href="mailto:mousavi@clemson.edu">mousavi@clemson.edu</a></td>
<td>Guest</td>
<td></td>
</tr>
<tr>
<td>R.C. Peters</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Kurt Montesano</td>
<td><a href="mailto:kurt.montesano@smithandwade.com">kurt.montesano@smithandwade.com</a></td>
<td>BE/BPC/PROV. CORDAB. MEM</td>
<td></td>
</tr>
<tr>
<td>Jovan Pantelic</td>
<td><a href="mailto:PANTELIC@BERKELEY.EDU">PANTELIC@BERKELEY.EDU</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wim Maassen</td>
<td><a href="mailto:wim.maassen@rhdhv.com">wim.maassen@rhdhv.com</a></td>
<td>Guest (prov. corp.)</td>
<td></td>
</tr>
<tr>
<td>Don Snell</td>
<td><a href="mailto:a.snell@libertybuilding.com">a.snell@libertybuilding.com</a></td>
<td>Guest</td>
<td></td>
</tr>
<tr>
<td>Maya Salabashew</td>
<td><a href="mailto:maya.i.salabashew@kp.org">maya.i.salabashew@kp.org</a></td>
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<tr>
<td>Travis R. English</td>
<td><a href="mailto:travis.r.english@kp.org">travis.r.english@kp.org</a></td>
<td></td>
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<tr>
<td>Sierra Spitulski</td>
<td><a href="mailto:sierra.spitulski@p2seng.com">sierra.spitulski@p2seng.com</a></td>
<td>Guest</td>
<td></td>
</tr>
<tr>
<td>Owen Cadwalader</td>
<td><a href="mailto:ocadwalader@nust.edu">ocadwalader@nust.edu</a></td>
<td>Guest</td>
<td></td>
</tr>
</tbody>
</table>
Burris Bradford, missed ID (at momcon) but would love to help! burris.bradford@tlc-eng.com

S6PC 10 - Interaction Affecting the Achievement of Acceptable Indoor Environments

Eric Brodsky w/ Aprilaire
Eric.brodsky@aprilaire.com
1. Welcome and Introductions

2. Refresh on Purpose and Direction
   - People attend to get ideas for research and to fill knowledge gaps and be better informed. We want to connect research with practical engineering and find ways to bring all this knowledge to people to practically apply it.
   - Our group responds to emerging issues with info and assistance. Do no harm. We arrange for future seminars/programs, update position papers, FAQs, and contribute to handbook updates. We fill gaps in knowledge by recommending research and sharing knowledge/lessons learned at meetings.
   - Our subcommittee addresses issues such as: Ebola virus disease, Influenza, Lassa Fever, MERS-CoV, TB, C-Diff, bacterial pneumonia, Noroviruses and airline toilet monitoring, CRE/Phantom Menace, measles, Legionella, Antibiotic resistance, and outbreaks and HAI deaths in hospitals.

3. Updates/Lessons Learned
   a. UNKNOWN INFECTIOUS DISEASES
   b. LEGIONELLA. New CMS requirements. Multiple cases reported; hot tubs, cooling towers, the usual suspects.
   c. MERS. 35 Cases June 1-10. 14 more cases reported between June 11-15, 2017 in Saudi Arabia.
   d. INFLUENZA.
      ii. H5N8 in Luxemburg Zimbabwe south Korea
      iii. Low path H7 in Lybia
      iv. Avian Influenza January 2017-June 2017
c. HOSPITAL CONSTRUCTION
   i. UPMC – possibly in the laundry

f. TB.
   i. 9,287 new cases in the U.S. in 2016. Multi-drug resistant and Extensively drug-resistant cases are on the rise. Pediatric cases may be underestimated by 75% (Clinical Infectious Diseases/Oxford Academic). Concern about diabetes suppressing immune system – allowing TB to take hold.

A deadly and expensive foe

Only a handful of patients have drug-resistant forms of tuberculosis, but treatment comes at a high cost in L.A. County.

<table>
<thead>
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<th>Treatment Level</th>
<th>Direct Treatment Costs per Case, 2010 (typical length of treatment)</th>
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<td>TB (6-9 mos. treatment)</td>
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<tr>
<td>Multidrug-resistant TB (20-26 mos.)</td>
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<tr>
<td>Extensively drug-resistant TB (32 mos.)</td>
<td>$430K</td>
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</table>

Of those treated for drug-resistant tuberculosis:

- Die during treatment: 9%
- Stop working: 27%
- Hospitalized: 73%
- Require home isolation: 37%

Source: Centers for Disease Control

@latimesgraphics

[g. VARIOUS]
   i. Antibiotic resistance.
      1. Outer Space ES Article.
      2. ¾ of all antibiotics from Actinobacteria, which is now shown to be the source of resistant genes.
      3. Spread of MCR-1 faster than expected.
   ii. C-Diff. Floor cleaning found to be important. Impact of humidity.
   iii. Lassa Fever in Ondo.
   iv. Measles and Pertussis Outbreaks in low vaccination areas continue.
   v. MDR fungus.

4. Transferring patients show to contribute to spread between hospitals.

5. Microbiome Project published. More to come.

6. ICRA Best Practices and Lessons Learned

7. Harvard Medical Center Healthcare Symposium Report from Traci

8. Poor Indoor Air Hydration - Impact on patient outcomes.


10. Suggested Programs and Research

11. AII Room Design Document