

**ASHRAE TC 9.10 Laboratory Systems  
Chicago  
Tuesday January 27, 2015  
Meeting Minutes**

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 TULLIE CIRCLE, N.E./ATLANTA, GA 30329  
404-636-8400**

**TC/TG/TRG MINUTES COVER SHEET**

TC/TG/TRG NO	9.10	DATE	February 9, 2015
TC/TG/TRG TITLE	Laboratory Systems		
DATE OF MEETING	January 27, 2015	LOCATION	Chicago

Members Present	Term Expires	Members Absent	Term Expires	Ex-officio members and additional attendance
Kelley Cramm	2017	Gerhard Knutson	2017	Patrick Carpenter
Roland Charneux	2016	John Castelvechi	2017	Mary Foutz
Henry Hays	2018			Fred Lorch
Carl Crow	2017			Mitchell Swann
Jim Coogan	2018			B. Fullerton
John O Varley	2016			W. Kumpf
Adam Bare	2015			Tom Smith
Charles Coward	2018			P. Pelczynski
Brad C Cochran	2015			Guy Perreault
Carol Ann Donovan	2018			Frank Spevak
Robert Weidner	2018			Robert H Weidner
Traci Hanegan	2015			Ronald L.Wendorski
Charles Henck	2017			Guy Perreault
Gordon Sharp	2016			S. Rusk
Ginger Scoggins	2015			Peter Gardner
Mark Hydeman	2018			Kenneth W Kuntz
				D. Heinzerlig
				Jason A Atkinson
				Hoy R Bohanon

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				Christine Reinders
				E. Ballachey
				J. Ritter
				J.L. Edmonston
				L. Le
				R. Petersen
				C. Lowell
				K. Gilkison
				Ken Mead
				Nathan Ho

**DISTRIBUTION**

*All Members of TC/TG/TRG plus the following:*

<i>All Members of TC/TG/TRG plus the following:</i>	
TAC Section Head:	Lynn Werman
TAC Chair:	Eric Adams
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	Darrin Nutter Jay D Cederberg
Standards liaison	Malcolm Knight
Manager of Research & Technical Services	Michael R. Vaughn
Research liaison	Jeff Gatlin Kishor Khankari

**1. Call to order 3:30**

Roland Charneux called the meeting to order and established a quorum with 18 voting members present.

**2. Introductions**

All present introduced themselves and were invited to sign the attendance sheet.

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### **3. Membership Update (Guy Perreault)**

All interested in becoming a corresponding member should give their card to Roland, Fred, Traci, or Guy with their ASHRAE number.

After 01 July 2015, the following voting members become corresponding: Gerhard Knutson, Traci Hanegan, Adam Bare, Brad Cochran, and Ginger Scoggins.

After 01 July 2015, the following members become voting members: David Rausch, Guy Perreault, Nathan Ho, Peter Gardner, and Gaylon Richardson.

After 01 July 2015, the following visitors and provisional corresponding members become corresponding members: Chris Lowell, David Heizerling, Kevin Gilkison, Ken Mead, Martin Stangl, Jared Ritter, Kenneth Kuntz, Lloyd Le, and John Neubauer.

After 01 July 2015, Roland Charneux will remain Chair, Fred Lorch will remain Vice-Chair, and Traci Hanegan will remain Secretary.

### **4. Approval of previous minutes**

Minutes from the Seattle meeting were emailed previously.

Minutes from the Seattle meeting were reviewed. The attendance sheet was corrected to show Kelly Cramm as present.

Moved and seconded to accept the minutes.

Motion passed. (14-0-0 CNV)

### **5. Section Head Report (Fred Lorch)**

2014-15 Hightower award went to John Carter in TC4.3. Service to ASHRAE research award went to Ian Walker from TC 4.3. Top TC award went to TC9.9.

New Operation and Maintenance activities multi task group has been formed

CEC is looking for track suggestions for St. Louis meeting in summer 2016. Send to Tony Giometti [giometti@ashrae.org](mailto:giometti@ashrae.org) at ASHRAE.

New TAC presentation template available for use when going to local chapter to present.

PDC is looking for new ALL courses info. Send to Ken Murray or [PCDchair@ashrae.net](mailto:PCDchair@ashrae.net).

Information is available to assist in writing language that will be adopted by code.

Investigating doing TC subcommittee meetings by conference calls and web meetings.

Bios – update your new category.

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All members are requested to review the ASHRAE code of Ethics. Go to <https://www.ashrae.org/about-ashrae>

Updated TC/TG/MTG information continuously posted on ASHRAE website. Go to <https://www.ashrae.org/standards-research-technology/technical-committees>

TC's are encouraged welcome guests and encourage more engagement in TC activities.

## **6. Program Subcommittee (Carol Donovan)**

See attached subcommittee minutes

## **7. Research (Bob Weidner)**

See attached subcommittee minutes

## **8. Handbook**

Lou was not able to attend today. The handbook was reviewed and submitted recently. No new activity at this meeting.

## **9. Standards (Gaylon Richardson)**

17 persons present

Roland Charneux, Ken Kuntz, Matt Gaedtle, So-Yeng Chen, John Garrett Neubauer, Brad Cochran, Tom Smith, Carol Donovan, Pete Gardner, David Raush, Bob Weidner, Adam Bare, Jake Edmonston, Kelley Kramm, Bill Tschudi, Henry Hays, Mark Hydeman

In the absence of Gaylon Richardson, Roland Charneux was chairing the sub-committee meeting.

1- Std 90.1 A series of comments has been sent from Tc-9.10 members on the air transfer from adjacent spaces.

2- Std 62.1 Nothing to report

3- Std 110 Should be sent out for final public review in the next few weeks.  
The tracer gas referred in 110 is still SF-6.

4- AIHA Z-9.5 is now under the responsibility of ASSE. Gerhard Knutson, Dale Hitchings, Jim Coogan and Tom Smith are part of the review sub-committee.  
Next publication for Z-9.5 is due for 2017.

5- SPC-111 Testing and balancing. No report.

6- I2SL. Best practices are published. Many TC-9.10 members are involved with I2SL. Local chapters are developing in many cities. I2SL will

Probably propose an RTAR to update, improve their benchmarking tool for labs.

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**10. Design Guide (Henry Hays)**

See attached subcommittee report.

**11. Laboratory Energy Efficiency (Guy Perreault)**

25 persons present,

Roland Charneux, Nathan Ho, Ken Kuntz, Matt Gaedtle, So-Yeng Chen, Henry Hays, John Garrett Neubauer, Mark Hydeman, Adam Bare, Jake Edmonston, Carl Crow, Martin Stangl, David Heizerling, Chris Lowell, Kelly Cramm, Brad Cochran, Tom Smith, Carol Donovan, Fred Lorch, David Raush, Lloyd Lee, Guy Perreault, Frank Spevak, Bob Weidner, J. Patrick Carpenter.

First call by e-mail received 25 names of interested persons.

This totals to 38 persons interested in Labs energy efficiency.

Recommendations from the sub-committee:

1- TC-9.10 should officially name a liaison to Std 90.1, Mark Hydeman have accepted to be the liaison.

2- Objective is to minimize energy consumption while keeping the safety in labs.

3- Safety and energy efficiency are not necessarily in opposition.

4- At present, there is no need to create a special energy standard for labs.(for example a 90.5)

5- Develop guidance and guidelines, on systems and equipments.

These guidance could find their ways in Handbook and design guide, etc....

6- Develop quantitative and qualitative informations.

7- In the future, it would be possible to develop an advanced design guide for labs.

8- Thru this sub-committee, TC-9.10 will be pro-active to propose ideas and addendum to 90.1

9- Next steps:

Develop a mission statements and a list of potential guidelines that could be interesting for the Labs community.

11- Guy Perreault has accepted to chair this Sub-committee for the next 6 month.

**12. Journal (Roland Charneux)**

Roland Charneux reported that we had one article in November about efficient university labs and there is another one in preparation.

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**13.Laboratory Design Course (John Varley)**

The class in Chicago went well. There was an idea for another 3 hour class on lab controls and lab exhaust stacks.

**14.Laboratory Classification (Adam Bare)**

See attached subcommittee minutes

**15.. Liaison Reports**

TC 1.4 Control Theory and Applications – (Jim Coogan reported)

Many attempts at educational programs – operators, technicians, engineers. Looking at certification type.

TC 2.2 Plant and Animal Environment (Henry Hays reported)

RTAR on animal vivarium

TC 4.3 Ventilation Requirements and Infiltration (Brad Cochran reported)

Research program ongoing for separation between intakes and exhausts. Looking for a simple equation to use if the table doesn't work for a given situation. Suggested a new RTAR to look at effectiveness of fan in certain situation.

TC 4.10 Indoor Environmental Modeling (No Report)

TC 5.1 Fan Design and Application (Chuck Coward reported)

Totally fascinated with the end effect on various kind of fans. Anticipate some DOE involvement with fan efficiencies and how to apply this fan efficiency grade. Knowing where the difference of opinion is, this could go on for years.

TC 5.3 Room Air Distribution (Fred Lorch reported)

Nothing at this time relevant to TC 9.10.

TC 5.8 Industrial Ventilation (Ken Mead reported)

Tracer gas support.

TC 7.6 Building Energy Performance

No report.

TC 7.7 Test and Balance

No report.

TC 7.9 Building Commissioning (John Castelvechi reported)

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Consolidation work with guidelines and standard.

TC 9.2 Industrial Air Conditioning

No report.

TC 9.6 Healthcare Facilities (Traci Hanegan reported)

Nothing at this time relevant to TC 9.10.

TC 9.11 Clean Spaces (Roland Charneux reported)

Nothing at this time relevant to TC 9.10.

SSPC 62.1 Ventilation for Acceptable Indoor Air Quality (Nathan Ho reported)

No report.

SSPC 90.1 (Mark xx)

Nothing at this time relevant to TC 9.10.

SMACNA

No report.

NFPA 45 (Dave Rausch reported)

New edition was submitted last summer. Nothing else new.

NSF (Frank Spevak reported)

Reconvening at end of May to discuss updates. A few minor votes over the last 6 months, but nothing relevant to labs.

ISPE (Pete Gardner reported)

Sustainability guide and filter guide coming out in a couple of months.

ASSE Z9.5 (Tom Smith)

Working on next revisions.

I2SL (Gordon Sharp reported)

Sponsored New England fume hood summit. Lots of ongoing activity. Check their website.

**16. Old business (Roland Charneux)**

None.

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**17. New business**

Energy efficiency subcommittee and lab classification action coming up.

Discussion on having a more focused effort on greeting new attendees and drawing them in with mentor pairing. There were a couple of volunteers to get this started at the next meeting.

ASHRAE Guideline 2 Engineering Analysis of Experimental Data will expire in the next 2-3 years. A new rule of the board requires that all standards to be written in definitive mandatory language. This guideline will be revised to be a mandatory language standard.

UCLA fume hood summit. Revision in 1998 to have a summit sponsored. State of the science. Expanded into lab ventilation. November 2013 summit. Came up with 55 consensus statements that were reaffirmed or changed. The revision of that has been voted on and will go to publication in the next couple of months. Adds some additional info to the body of knowledge. Because that went far afield from the fume hood, they did a New England fume hood summit. CSHIMA. Concentrated on fume hoods, design, testing, specification, etc. 4 primary categories on that. Proceedings are being compiled for publication soon. Good resources. Presenting on that in Atlanta.

Attendees at the main meeting are strongly encouraged to attend the subcommittee meetings to get involved. The subcommittee meetings are the most interesting and where most of the action takes place.

Potential of a part 2 course on Lab Design focusing on Labs Controls. Jim Coogan will do follow-up to prepare this new course and a part 3 on labs exhaust under the direction of Brad Cochran.

USP is hosting an open microphone webinar to discuss upcoming revisions for USP 800. This will be on February 20, 2015 from 2-4pm EST.

**18. Adjourn**

**ASHRAE TC 9.10  
Program Subcommittee Meeting Agenda  
Chicago Winter Conference  
Tuesday January 27th, 2015  
3:30 – 6:00 p.m.**

**General House Keeping Notes:**

1. Presentations are due 1 month prior to the conference. Initial presentation upload for committee review and commercialism review is necessary. Presentation changes can be made after the initial upload. Waiting for the last minute or not meeting the initial upload deadline may result in a speaker strike. CEC is considering a 3-strike policy.
2. Strongly recommend speakers to use the sample presentation located in speakers tool kit on the ASHRAE website. Need to include the AIA slide/disclaimer. Need to follow the commercialism policy.
3. CEC is still looking for conference paper reviewers. Please let your committee chair know if you are interested in volunteering for this.
4. Speaker's need to score at least a 3.5. Below a 3.5 will result in a strike. Feedback will be provided for the speaker's.
5. If session submissions are rejected for a conference it can be resubmitted for the next conference. Recommend follow-up with the track chair to find out why the session did not make the conference.
6. Workshops – New for Seattle – Focus of the workshop is to unite senior/experienced members with young members/professionals for learning. Format will be 2- 15 minute presentations followed by a 30 minutes interactive workshop.
7. When submitting a seminar, you need to select a track and reference the 'Mini-Conference'.
8. When submitting a seminar, please be sure to submit complete abstracts. Some seminars get rejected because the author simply provides a title or one sentence. A quality abstract includes enough information about the topic and content to judge the probable quality of the presentation. That doesn't mean it needs to be long = just carefully written. It is much more difficult to give a quality five minute presentation than a 30 minute presentation. You typically need to prepare a longer presentation and then condense it.

**Chicago Meeting – Jan 24-28, 2015**

Website: [www.ashrae.org/chicago](http://www.ashrae.org/chicago)

No.	Type	Title	Chair/back-up	Accepted
1	Seminar	Lab Safety and Fire Alarm Response Track – Life Safety	Reinhard, Seidl Paul Fuson	Yes
2	Half Day Short Course	Lab Design – The Basics and Beyond	John Varley	Yes

**Atlanta Meeting – June 27-July 1, 2015**

Website: [www.ashrae.org/chicago](http://www.ashrae.org/chicago)

**Current Goal for Atlanta is to Present a Mini-conference on Labs including seminars and forum. This will require approximately 10 presentations or 4 sessions (2-1.5 hour sessions and 2-1 hour sessions). Suggested topics are outlined below:**

**Paper Abstract Deadline: January 5<sup>th</sup>, 2015**  
**Seminar/Forum Deadline: February 9<sup>th</sup>, 2015**

Conference Program Chair: David Claridge, [dclaridge@tamu.edu](mailto:dclaridge@tamu.edu)

No.	Type	Title	Chair/Sponsor	Speakers
1	Forum 2 speakers	Lab Classification/Lab Safety and Energy Management - AIHA committee - jim coogans, ralph stuart - American chemical society - paper on control banding - talks about chemical safety levels - List of parameters - DCSL - design chemical level - set of parameters - ach rate, energy recover, monitoring, - separate ASHRAE from EHS - CSL level 3 - EHS will have to evaluate if this is a CSL3 or CSL4 -	Carol Donovan	Adam Bare, Tom Smith, Ralph Stuart, Jim Coogans - Present
2	Seminar, 3 speakers	Cxing of BSL-3 laboratories, CDC Atlanta, USDA	Pete Gardner	Chris Kiley Scott Rusk
3	Seminar, 3 speakers	Lab Renovations/Retro-fit	Jim Coogan	Paul Fuson Tom Smith
4	Seminar, 3 speakers	Vivarium - ACH/environmental parameters, Demand Control Ventilation	Dave Rausch	Carol Donovan Gary Cooper Masaya Ishihara
5	Seminar, 3 speakers	Lab Exhaust and Energy Efficient Design	Brad Cochran	Glenn Freidman John Carter Martin Stangl
6	Seminar, 2 - Speakers	UCLA - Fume Hood Summit New England Fume Hood Summit	Tom Smith	Gordon Sharp Howard Hughs Lou - MIT
7	Seminar 2 - Speakers	Energy Efficient Labs - Case Studies	Adam Bare	Dave Rausch Chris German
<b>Not Confirmed</b>				
8	Seminar 2 - speakers	Test Procedures for Lab Controls Results from Manufacturers University of Texas - valve response Compared to manufacturer data Test protocol - methodology	Mark Hydeman	Gaylon Richardson Guy Perrault
9	Seminar 2- speakers	Comparison of Fancoil Units and Chilled beams (TC 5.3) in labs	Gaylon Richardson	

## Atlanta Summer 2015 Tracks:

- **Track 1: HVAC&R Systems and Equipment - Track Chair: Jon J. Cohen / Rocky Alazazi**  
Email: [jcohen@hohwatertechnology.com](mailto:jcohen@hohwatertechnology.com) / [mralazazi@yahoo.com](mailto:mralazazi@yahoo.com)

This track solicits papers and presentations on all aspects of HVAC&R Systems and Equipment. Efficiency is always important, so information on new and improved equipment and systems offering improved efficiency is particularly welcome.

- **Track 2: HVAC&R Fundamentals and Applications- Track Chair: Ann Peratt / Cynthia Moreno**  
Email: [agregg.ksu@gmail.com](mailto:agregg.ksu@gmail.com) / [cindym@tmmechanical.com](mailto:cindym@tmmechanical.com)

Fundamental information and applications of fundamentals related to all aspects of HVAC&R are welcome. This can range from fundamental psychrometrics to combustion, system and envelope fundamentals and beyond.

- **Track 3: Research Summit - Track Chair: Thomas H. Kuehn / Samir Traboulsi**  
Email: [kuehn001@umn.edu](mailto:kuehn001@umn.edu) / [traboulsi.samir@gmail.com](mailto:traboulsi.samir@gmail.com)

This track will continue the highly successful Research Summit tracks pioneered at Denver and Seattle. Research results related to any aspect of heating, cooling and other energy uses in buildings are solicited.

- **Track 4: Refrigeration - Track Chair: Gary C. Debes / Monte G. Troutman**  
Email: [gcdebes@verizon.net](mailto:gcdebes@verizon.net) / [montemechsys@bellsouth.net](mailto:montemechsys@bellsouth.net)

Refrigeration is a critical element of modern life, from preserving our food to maintaining comfort. The ozone depleting potential of the older refrigerants has led to adoption of non-ozone depleting refrigerants, with the focus now shifting to refrigerants with low global warming potential. These factors when combined with multiple drivers toward energy efficiency may lead to a diverse set of different refrigerants and processes for different cooling applications. This track will have presentations and papers from all areas of refrigeration and will particularly explore related technologies that will reduce the use of traditional refrigerants including evaporative cooling and desiccants.

- **Track 5: Building Operation, Maintenance and Optimization/Commissioning - Track Chair: Alan Neely / Mike McDermott**  
Email: [alan\\_neely@pghcoming.com](mailto:alan_neely@pghcoming.com) / [mmcdermott@grummanbutkus.com](mailto:mmcdermott@grummanbutkus.com)

Operation and maintenance have always accounted for a major portion of building expenses and a much smaller level of engineering effort aimed at controlling these expenses. Over the last one to two decades, there has been an increasing realization that real engineering applied to operation, maintenance and operational optimization or "commissioning" can bring increased comfort and offers huge financial returns. This track solicits papers and presentations related to any and all aspects of this topic.

- **Track 6: Indoor Air Quality -Track Chair: Chuck Curlin / Dennis Alejandro**  
Email: [ccurlin@shultzeg.com](mailto:ccurlin@shultzeg.com) / [denzjac@yahoo.com](mailto:denzjac@yahoo.com)

Indoor air quality has become a vital consideration during all phases of a building's life. It is closely linked to comfort and to occupant satisfaction, productivity and health. This track seeks presentations and papers that explore these links, particularly in ways that make the case for high levels of indoor air quality compelling to building owners.

- **Track 7: Modeling throughout the Building Life Cycle -Track Chair: Jeffrey Spittler / Michael Collarin**  
Email: [spittler@okstate.edu](mailto:spittler@okstate.edu) / [Michael.Collarin@parsons.com](mailto:Michael.Collarin@parsons.com)

Modeling was originally concerned primarily with building and system design specifications. The demands of energy efficient operation brought about the need for modeling of part-load operation for a variety of off-design conditions. The explosion of computational capacity and data collection capability is rapidly expanding the scope, complexity and practical applications of modeling both during design, but even more so for fault detection, diagnostics and operational optimization. Thirty years ago, people were dreaming of doing some of the things that Building Information Modeling is now bringing to reality. Presentations and papers are solicited related to all aspects of building modeling, with a particular interest in successful applications that have extended modeling into operational phases of the building life cycle.

- **Track 8: High Performance Buildings -Track Chair: Rachel Romero / Andrea Zarour / Mary Ann Piette**  
Email: [rachel.romero@nrel.gov](mailto:rachel.romero@nrel.gov) / [azarour@greaterbaymechanical.com](mailto:azarour@greaterbaymechanical.com) / [mapiette@lbl.gov](mailto:mapiette@lbl.gov)

This track seeks papers and presentations on the design and measured performance of high performance commercial and industrial buildings in North America and around the world. There are numerous examples of buildings designed for high performance that have fallen considerably short of the design intent and papers that identify reasons for these shortfalls are of particular interest.

- **Track 9: Moving Advanced Energy Design Guidance to the Mainstream -Track Chair: James Liston / Paul A. Torcellini / Frank Schambach**  
Email: [jliston@suffolk.com](mailto:jliston@suffolk.com) / [paul.torcellini@nrel.gov](mailto:paul.torcellini@nrel.gov) / [frankschambach@mindspring.com](mailto:frankschambach@mindspring.com)

This track focuses on the Advanced Energy Design Guides, with a circulation of over 500,000, and other like methods for reaching a broad audience with advanced energy efficiency. The target is a 50% reduction in energy. Papers and sessions focus on methods for using the guides including actual building case studies, educational curriculum, and other documented uses to move the market towards energy efficiency. Also, papers and sessions focus on the methods to create the guidance.

#### **Laboratory Program Ideas – Orlando Winter 2016:**

1. Commissioning Research Facilities (with TC-2.2), Understanding hazard and risk, lab classification effort
2. Equipment Loads in Labs, Freezers, refrigerators
3. Vivarium Design – TC 2.2
4. Lab Users, Safety and sustainability
5. Renovation and Retrofit
6. Rad Cooling and Chilled Beams
7. Lab Ventilation effectiveness
8. Exhaust Modeling, heat recovery
9. On-going performance and monitoring
10. CFD analysis on chemical fume hoods
11. Lessons Learned on Designing labs
12. Training Operators – What they need to know
13. Industry Trends – Plug Loads
14. Updates on design guide / handbook

## Orlando Winter 2016 Tracks:

- **Track 1: Systems and Equipment - Track Chair: Gary C. Debes**  
Email: [gcdebes@verizon.net](mailto:gcdebes@verizon.net)

Selection of equipment and systems is paramount to HVAC&R design. Papers and programs in this track will assist designers, engineers, and operators in the design, selection, and operation of HVAC&R systems and equipment.

- **Track 2: Fundamentals and Applications - Track Chair: Cynthia Moreno**  
Email: [cindym@tmmechanical.com](mailto:cindym@tmmechanical.com)

Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, fluid and mass flow, IAQ, and building envelope. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design elements and shared experiences for theoretical and applied concepts of HVAC&R design are included.

- **Track 3: Design Build - Track Chair: James Liston**  
Email: [jfliston@verizon.net](mailto:jfliston@verizon.net)

Joining the contractor and the designer into the same team, the design-build method of project delivery is increasing in percentage of projects awarded in the US. This track explores the challenges and benefits of D-B project delivery. Highlight successful projects; discuss contracts; review management responsibilities; offer alternative design and construction processes. These topics and more will be included.

- **Track 4: International Design - Track Chair: Leon Shapiro**  
Email: [leoneshapiro@gmail.com](mailto:leoneshapiro@gmail.com)

Design for various environmental elements, geography and culture demand that new and innovative strategies be developed. As an international organization, ASHRAE strives to meet the needs of a global membership. HVAC&R systems vary globally and this track provides an opportunity to share innovative and necessary design elements that can be shared internationally.

- **Track 5: Standards, Guidelines and Codes - Track Chair: Michael Collarin**  
Email: [Michael.Collarin@parsons.com](mailto:Michael.Collarin@parsons.com)

ASHRAE is known for its standards and design guidelines – and they are constantly evolving with the intent on improving the built environment and its systems. Designers, Contractors, Architects and Owners must be able to keep up with the continuing changes in the current cycle but to also be prepared for the future changes. In addition, there is a large interaction of ASHRAE with the code authorities and government to incorporate these standards and guidelines. The series of sessions in this track highlight the changes to the standards and guidelines, their projected path and optimum design techniques to meet or exceed the standards.

- **Track 6: Cutting-Edge Technologies - Track Chair: Ann Peratt**  
Email: [agregg.ksu@gmail.com](mailto:agregg.ksu@gmail.com)

As energy codes become increasing more stringent, we are challenged to find creative ways to improve efficiencies in the effort to achieve net zero buildings. This track will include the most recent advances in HVAC&R system design, equipment, and construction techniques. Programs included will focus on efficiency, responsible use of resources and energy recovery.

- **Track 7: The Great Debate - Track Chair: Chuck Curlin**  
Email: [ccurlin@shultzeg.com](mailto:ccurlin@shultzeg.com)

Engineers commonly weigh multiple solutions to find the best match for a certain project. Centralized or Decentralized heating and cooling? Chemical or non-chemical water treatment? These sessions and papers will present divergent methods for accomplishing the same task. Hear all sides of the debate and decide for yourself.

- **Track 8: Modern Residential Systems - Track Chair: Rocky Alazazi**  
Email: [mrалazazi@yahoo.com](mailto:mrалazazi@yahoo.com)

Engineering for residential HVAC and plumbing systems and equipment used to be referred to as catalog engineering: for a two bedroom house choose one from Column A; for a three bedroom house choose one from Column B. Recent years have seen a boom in energy efficient solutions for the savvy, fiscally-conscience home owner. From glazing to water heating to lighting, this track will provide you with the latest advances for the residential market.

**Conference Program Chair: Jennifer Leach**  
Email: [pennst8jen@yahoo.com](mailto:pennst8jen@yahoo.com)

TC 9.10 Lab Ventilation Program Subcommittee Meeting Attendee list

Name	Email
Carol Donovan	<a href="mailto:Cdonovan@Sebesta.com">Cdonovan@Sebesta.com</a>
<b>Tom Smith</b>	<a href="mailto:Tcsmith@labhoodpro.com">Tcsmith@labhoodpro.com</a>
<b>Brad Cochran</b>	
<b>Kelley Cramm</b>	<a href="mailto:Kelley.cramm@hei-eng.com">Kelley.cramm@hei-eng.com</a>
<b>Adam Bare</b>	<a href="mailto:abare@newcomb-boyd.com">abare@newcomb-boyd.com</a>
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<b>Ken Kuntz</b>	<a href="mailto:Kenneth.kuntz@greenheck.com">Kenneth.kuntz@greenheck.com</a>
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<b>Patrick Carpenter</b>	<a href="mailto:Facperfeng@comcast.net">Facperfeng@comcast.net</a>
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<b>Guy Perreault</b>	<a href="mailto:Guy.perreault@evap-techmtc.com">Guy.perreault@evap-techmtc.com</a>
<b>David Rausch</b>	<a href="mailto:Drausch@phoenixcontrols.com">Drausch@phoenixcontrols.com</a>
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**ASHRAE RESEARCH**

**TC9.10 LABORATORIES - RESEARCH ACTIVITY LIST**

**1/25/2015**

DOCUMENT TYPE	MORTS NUMBER	DOCUMENT TITLE	CO-SPONSOR	PROJECT COST	AUTHOR	AUTHOR E-MAIL & TELEPHONE	STATUS	ACTION ITEMS	DUE DATES	1/24/15 Sub Committee Meeting Comments			
RTAR	1540	TURBULENCE INTENSITY AT THE FUME HOOD FACE		TBD	TBD	<a href="#">TBD</a>	Know one stepped up to take this on.	<b>RTAR will not be pursued by TC9.10</b>	TBD				
RTAR	1573	INVESTIGATE THE REPLACEMENT TEST GAS FOR SF6		\$125,000	HYDEMAN	<a href="mailto:mhydeman@taylor-engineering.com">mhydeman@taylor-engineering.com</a> 510-263-1543	Work Statement conditionally accepted. Work Statement is close to being completed from comments provided. RTAR update was also requested by RAC Trying to be consistent with direction of work.	<b>RTAR to be updated. Email Vote by March for Work Statement to move forward. Looking for PES members to volunteer for this workstatement.</b>	Chicago				Final Draft of Work Statement to be completed by Feb 2015. Finalizing comments from new RAC Liasson and Past Liasson. PES members should include representation from SSPC 110.
RTAR	TBD	METHOD OF TESTING BALANCE ENCLOSURES	TC7.9	TBD	SMITH	<a href="mailto:tcsmith@labhoodpro.com">tcsmith@labhoodpro.com</a> 919-319-4290	Seattle-Tom S. discussed with as ASFE and CIFA and they do not want to take this on.TC9.10 does not want to pursue based on subcommittee discussion.	<b>RTAR will not be pursued by TC9.10</b>	NA				Tom went to ASFE and CIFA and they don't want to take this on. TS wrote a draft TPS which he'll circulate
RTAR	1201	The Effect of Active and Passive Chilled Beams on Laboratory Fume Hood Performance	TC 5.3	TBD	Lawton	<a href="mailto:wlawton08@gmail.com">wlawton08@gmail.com</a> 303-699-9608  720-346-8243	Seattle-Per Gaylon, TC 5.3 did not discuss this. TC9.10 does not want to pursue based on subcommittee discussion.	<b>RTAR will not be pursued by TC9.10</b>	NA				
RTAR	TBD	Cross Contamination of Energy Recovery Devices in Laboratory Exhaust Systems	62.1 90.1	TBD	Roland C.		Chicago-There was lots of discussion regarding the intent of RTAR and what should be included to get the most out of it.	<b>Roland C. to update RTAR in preparation for</b>	Atlanta				Concerns expressed with heat wheels. There is no MOT for contaminants. Also what happens with the seals. This could be used on general exhaust. You should not do this in Vivarium.
RTAR	TBD	Certification of Ductless Fumehoods		TBD	Tom Smith	<a href="mailto:tcsmith@labhoodpro.com">tcsmith@labhoodpro.com</a> 919-319-4290	Initiated at NY Mtg. Per Tom Smith, SIFA is undertaking this effort. Wait and see until they complete their standard.	<b>This RTAR will not be pursued by TC9.10</b>	NA				c/o Tom Smith. CIFA is undertaking this effort. Wait and see until they complete their standard. At best 2 years until they come up with a method.
RTAR	TBD	Validation of Plume dispersion models			Brad Cochran	<a href="mailto:bcochran@cppwind.com">bcochran@cppwind.com</a>	Chicago-There was lots of discussion regarding the intent of RTAR and what should be included to get the most out of it.	<b>Brad to push forward this RTAR</b>	Atlanta				Existing dispersion models are conservative. Brigg's plume rise equations need to be validated for this application. This was based on a power plant exhaust. Guess the turbulence and test at 2X and 0.5X. This may need a full scale test.
RTAR	TBD	Defining and characterization of air-change effectiveness in labs.	TC 9.6, TC 9.10	TBD	Tom Smith	<a href="mailto:tcsmith@labhoodpro.com">tcsmith@labhoodpro.com</a>	Chicago - Tom Smith addressed this potential RTAT - ASHRAE Standard 129 does not fully address this.	<b>Tom to prepare RTAR</b>	Atlanta				Tom is going to use IPA with detector array to look at lab spaces. This will vary the airflow and air temperature. They will look at the change of concentration over time. Tom will review 129. Tom will present his results.

FTP SITE: <ftp://tc910pub:3dg3waT3r@ftp.ashrae.org> userid: tc910pub password: 3dg3waT3r

Permissions Status	CHAPTER	Chapter Leaders	Reviewers	Graphics Status	Smart Guide Status	Notes
None Needed	<b>1. Introduction</b>	Henry Hays	Gardner (C) Sharp(NC) Weidner (C) Wendorski (NC) Crow (C)	No revisions needed	None needed	Chapter essentially complete FINAL version January 14, 2014 with minor comments to update on references Also switch Chapter 3 and 4 description paragraph order
DONE	<b>2. Background</b>	Pete Gardner	Hays (NC) Weidner (C)	Graphics complete	None needed	CHAPTER COMPLETE Final version 8-19-14
Some permissions needed	<b>3. Laboratory Planning</b> (New Guide Chapter 4)	John Varley	Foutz Le	Reuse existing	None	Update: John Varley is working on a update for this chapter
Needed	<b>4. Design Process</b> (New Guide Chapter 3)	Erik Eaves/John Varley	Ho, Varley, Castelvecchi	John Varley working on getting Dibernadinis permissions from Wiley	None	Latest version in 1/20/15 e-mail. Try to keep lab descriptions – Kelley Cramm will work on.
DONE see 1/20/15 e-mail	<b>5. Exhaust Hoods</b>	John Castelvecchi	Smith (C), Hays (C), Rindoks (C)	DONE	None	CHAPTER ESSENTIALLY COMPLETE Final Version 1-20-15 Update – Tom Smith to send his comments
DONE See 1/20/15 e-mail	<b>6. Primary Air Systems</b>	Carl Crow	Sharp(NC) Gardner (C) Wendorski (C) Cochran (C)	Done, see 1/20/15 e-mail	None	CHAPTER COMPLETE Final version 02-23-14 version
None Needed	<b>7. Process Cooling</b>	Pete Gardner	Sharp(NC) Hays (NC)	None	None	CHAPTER COMPLETE Final Version 1-26-15
DONE See e-mail 1/21/15	<b>8. Air Treatment</b>	Charles Henck	Sharp(NC) Wendorski (NC)	No revisions needed	None	CHAPTER COMPLETE Final Version 05-24-13
Get, delete, or use ASHRAE source for one	<b>9. Exhaust Stack Design</b>	Brad Cochran	Ho, Sharp(NC) Coogan (C) Wendorski (C)	Graphics complete	Complete Videos and calculation template	CHAPTER COMPLETE Final Version Feb 10 2014.
Need for smart guide animation only	<b>10. Energy Recovery</b>	Roland Charneux	Ho, Sharp(NC), Wendorski (NC)	Done Reuse existing (None new)	Done	CHAPTER COMPLETE Final Version October 2013

None Needed	<b>11. Controls</b>	Jim Coogan, Gordon Sharp, John Castelvechi	Ho (C), Sharp(NC), Kiley (C), Guy Perreault	ALL GRAPHICS DONE	Done	CHAPTER ESSENTIALLY COMPLETE Final Version December 31, 2014 with QA review for incorporated comments only – Minor updates to do
None Needed	<b>12. Air Flow Patterns and Air Balancing</b>	Henry Hays	Weidner, Le,	None	None	CHAPTER COMPLETE Final Version January 15, 2015
None Needed	<b>13. Operation and Maintenance</b>	Jeff Traylor/Tom Smith	Smith (C) Gardner (C) Foutz	Maintenance of Fume Hoods/BSCs needs revision (by Tom Smith)	None	Latest Version 7-16-2013 Include Gardner and Smith comments Smith to do major revisions by next meeting (Jan 2015) Update 70% complete as of meeting
NONE	<b>14. Laboratory Commissioning Process</b>	John Castelvechi	Sharp(NC) Crow, Foutz (C) Smith Kiley (C) Ratcliff (C)	NONE	NONE	CHAPTER COMPLETE Final Version 6-29-2014
None Needed	<b>15. HVAC System Economics</b>	Henry Hays	Sharp(NC) Wendorski (NC)	No revisions needed	None needed	CHAPTER COMPLETE No change from original design guide
Needed	<b>16. Microbiological and Biomedical Laboratories</b>	Henry Hays	Has a subcommittee but others welcome	DONE	Carl Crow will look at getting some	Latest Version February 3, 2015 sent for final review
Mike's Company Only	<b>17. Ventilation Effectiveness and Modeling</b>	Mike Ratcliff	Ho, Sharp(NC) Cochran, Weidner (C)	DONE Appears that no permissions needed for graphics (confirm)	Done	CHAPTER COMPLETE Final Version 3 June 2014
Roland's Company Only (both graphics and Smart Guide)	<b>18. Sustainability</b>	Roland Charneux	Crow, Sharp (NC), Rausch, Coogan will get someone to look at	DONE	NONE (but may do animation)	CHAPTER COMPLETE Final Version 6-17-2014

Note from the January 2015

1. Schedule: Still pushing for the end of February to give to Special Publications. Some chapters to finish up, metric conversion, and overall review are the big efforts.
2. Kelley Cramm will coordinate the lab types update in the Design Process Chapter. Traci Hanegan can help with the Hospital Labs
3. Shinji Sunohara and his associates have latitude in picking the SI units to use.

Notes from June 2014 Meeting and immediately following:

1. **Permissions:** Dibernardinis graphics – Cannot track down who to get permissions – Delete these graphics and tables from chapters and either get new or delete reference to these items
2. Patrick Carpenter and Kelly Cramm will do overall review of the guide. UPDATE POST MEETING: Carl Lawson and Mark Hydeman will look at the entire guide too
3. David Rausch will keep listing of future comments for the next revision
4. Will the guide have color graphics? Henry to check UPDATE: Likely to have color
5. Mike Ratcliff to check with Mark Owen about incorporating smart guide items
6. Gordon gave Henry the contact for Paul Lemestre who may be able to review the lab types in Chapter 4

#### **OTHER NOTES from January 2014 Meeting:**

1. Appendix A-1: Delete this and refer to the Military Standard (from Carl Crow)
2. Chapter 4 Page 29 refer to EPA (Pete Gardner)
3. Look at certain words. Use confirm, shall do NOT ensure, warrant, guarantee, assure, assuring. There is a liability aspect of using the wrong words (Traci Hanegan)
4. PERMISSIONS: David Rausch will head this up to assist in overseeing permissions are gotten for diagrams, videos, illustrations, etc.
5. SMART GUIDE: Mike Ratcliff will assist in overseeing the Smart Guide and other Figures, tables are in the proper format
6. REFERENCES/TABLES: Guy Perreault will check to see if there are obsolete references or tables that should be revised or deleted.
7. Comments on chapters that are on the FTP site are due Feb 7, then Chapter leaders to revise by Feb 21.

#### **OTHER NOTES from June 2012 Meeting:**

1. Will there be color printing?
2. Peer Review required? – No per Traci Hanegan
3. Brad Cochran question on Chapter 9– Can there be an e-mail address for application support? Can it be commercial account?

#### **OTHER NOTES from January 2013 Meeting:**

8. Appendix A-1: Carl Crow will look at.
9. Need someone to look at/update References and Annotated Bibliography at the end of the design guide.
10. Save the documents as .doc instead of .docx as some cannot open the later.

**ASHRAE TC 9.10**  
**Lab Classification Subcommittee Meeting**  
Chicago Winter Conference  
Sunday, January 25<sup>th</sup>, 2015  
5:15 – 6:00 p.m.

Meeting Minutes:

Attendees:

Adam Bare	Nathan Ho	Bob Weidner
Brad Cochran	Ken Kuntz	Mark Hydeman
Tom Smith	Matt Gaedtler	Patrick Carpenter
Carol Donovan	So-Yeng Chen	Jake Edmondson
Guy Perreault	Henry Hays	Roland Charneux
Jim Coogan	John Garrett Neubauer	Chuck Coward
Martin Stangl		

1. Recap of recent activities:

- Several online meetings: ASHRAE, AIHA EH&S, ACS CCS
- Reviewed most recent meeting minutes
  - ACS Chemical on Chemical Safety’s draft guide: “Identifying and Evaluating Hazards in Research Laboratories”
  - Chemical Safety Design Levels (CSDL)
  - Addressed fundamental questions
- Updates to
  - Mission Statement
  - CSDL Tables >> comments under review
    - Potentially reference MSDS labels
    - Regarding room recirculation (for a single space), consider allowing for each label, and list the potential concerns
    - Recirculation for systems serving multiple spaces needs to be clarified

2. Next steps

- Post CSDL Tables and Mission Statement to CSDL website
- Continue monthly online meetings
- Engage other organizations to review and comment (e.g., AIA)
- Next online meeting February 2<sup>nd</sup>, at 2:00pm EST