

**ASHRAE Technical Committee 4.3: Ventilation Requirements & Infiltration  
2002 WINTER MEETING MINUTES**

Monday, January 14, 2002, 4:15 PM to 6:30 PM  
Atlantic City Convention Center (ACCC) 301

**1. Call to Order and Self Introductions**

Craig Wray, TC 4.3 Chair, called the meeting to order at 4:25

The following were in attendance:

<b>Name</b>	<b>Affiliation</b>	<b>E-mail address</b>
Mike Ratcliff	RWDI, Inc.	mar@rwdi.com
Ron Petersen	CPP, Inc.	rpetersen@cppwind.com
James Reardon	National Research Council Canada	james.reardon@nrc.ca
Steve Taylor	Taylor Engineering	staylor@taylor-engineering.com
Iain Walker	Lawrence Berkeley National Laboratory	iswalker@lbl.gov
Ryan Bailey	University of Alberta	rmbailey@ualberta.ca
Dennis Barley	National Renewable Energy Laboratory	dennis_barley@nrel.gov
Doyun Won	National Research Council Canada	doyun.won@nrc.ca
Pat Saathoff	Concordia University	saathoff@cbs-engr.concordia.ca
Kevin Sweeney	Micro-Clean	kevinsweeney@microcln.com
John Dieckmann	Arthur D. Little	dieckmann@adlittle.com
Art McIvor	CRS Industries, Inc.	Artmcivor2@aol.com
Craig Wray	Lawrence Berkeley National Laboratory	cpwray@lbl.gov
Brian Rock	University of Kansas	barock@ku.edu
Xudong Yang	University of Miami	xudongy@miami.edu
Alex Boome	Alexander Boome Consulting Eng., Ltd.	Aboome@abceltd.com
Max Sherman	Lawrence Berkeley National Laboratory	Mhsherman@lbl.gov
Theresa Weston	DuPont	theresa.a.weston@usa.dupont.com
Andy Persily	National Institute for Standards and Technology	andyp@nist.gov
Steve Emmerich	NIST	steven.emmerich@nist.gov
John Carter	CPP, Inc.	jcarter@cppwind.com
Ray Marchessault	Lindberg Engineering	rmarchessault@lindbergeng.com
Terry Logee	US Department of Energy	Terry.logee@ee.doe.gov
Bruce Wilcox	BSG	bwilcox@b-s-g.com
Eckhard Groll	Purdue University – TAC Liaison, Section 4	
Sheila Hayter	NREL – RAC Liaison, Section 4	sheila_hayter@nrel.gov
George Carscallen	2005 Fundamentals Handbook Liaison	
Hal Levin	Building Ecology Research Group	hlevin@cruzio.com

**2. Attendance & Quorum Check:**

Voting members for this meeting: Boome, ~~Estiburek~~, McIvor, Petersen, Ratcliff, Reardon, Taylor, Weston, Wray, ~~Yuill~~, ~~Zhang~~, ~~Feustel~~(IM), ~~Liddament~~ (IM).  
(11+2 IM, simple majority=6, super majority =7)

8 Voting Members were present; quorum was established.

**3. Approval of the Last Meeting's Minutes**

Minutes from the last meeting were distributed and reviewed. (Correction: Brian not 2005 Fundamentals Handbook Liaison; George Carscallen is.)

The minutes were approved (McIvor/Peterson: 6-0-0 CNV)

#### 4. Announcements & Society Liaisons

- **TC 4.3's web pages:** <http://hvac.arce.ukans.edu/ashrae/tc4.03/main.htm>
  - Will eventually move to space being made on ASHRAE's site
- **Section 4 Meeting announcements**
  - Push by Handbook Committee to make Handbooks more relevant; want TC feedback
  - TEGA wants meeting minutes to keep members up to date; Taylor to get liaison contact to send URL to our web site. (ASHRAE staff indicated that William Knight [bknight@greenville.k12.sc.us] was our liaison; URL has been sent to him.)
  - TC web site training to be offered at the Annual Meeting in Honolulu
- **TAC, RAC, Handbook, etc. Liaisons**
  - TAC, Eckhard Groll: Wanted to know if members would be attending Honolulu. Eight members said they planned to be there.
  - RAC, Sheila Hayter: Trying to get a section 4 breakfast meeting in Honolulu at 7 AM Monday (tentative) for Research chairs to discuss research activities to see if there are or can be overlapping subjects to create combined RPs. Our RTAR priorities 2 and 3 were approved (see Research subc. report). Sheila recommended developing WS as soon as possible.
- **ASHRAE Learning Institute**
  - Alex Boome said we could develop short courses or Professional Development Seminars. Looking for good content and good ideas. Possible courses from this TC: ventilation system design.
- **EHC** – Bernardo Cardenal not present.
- **ARTI (Air-Conditioning & Refrigeration Technology Institute).**
  - See [www.art-21cr.org](http://www.art-21cr.org) for reports on long range research/state-of-art reports as well as reports from on-going research projects

#### 5. Subcommittee Reports

##### a. Research (Jim Reardon):

##### 1) Current Research Projects:

- “Exhaust Contamination of Hidden vs. Visible Air Intakes”, 1168-RP, (Walker/Ratcliff/Zhang). Reardon reported that the contractor, Cermak Peterka Petersen Inc. requested a 3 month no-cost extension to enhance/simplify reporting of results. PMC approved; contractor must send request to Bill Seaton to get official approval. Report due end of May for review.
- “Heat Transfer during Residential Infiltration/Exfiltration”, 1169-RP, (Reardon/ Griffiths/Medina) Jim Reardon reported that the PMS met with contractors. Requested reports much earlier, well in advance of meeting. Project is on budget and on schedule.

## 2) Long Range Research Plan

### Rank Title (Authors)

- 1 ***The Effect of Ganging on Pollutant Dispersion from Building Exhaust Stacks***  
(**Ratcliff/Schuyler**). WS-1167 was submitted by the September 15, 2001 deadline and conditionally approved in October 2001 by RAC. Revisions for clarification (as requested by RAC and forwarded to Jim Reardon on January 4, 2002) were submitted January 9, 2002 to Sheila Hayter and Bill Seaton for consideration and prioritization by RAC January 12, 2002. Sheila Hayter confirmed that the conditionality of the work statement approval had been lifted and it has been approved for funding. (Bill Seaton has since confirmed that the WS will be sent out for bid when research funds are available, perhaps late fall 2002).
- 2 ***Multiple Space Effects on Ventilation System Efficiency***  
(**Taylor/Liu**). This RTAR was submitted as our first priority new project with the 2002-2003 LRRP for August 1, 2001, and was assigned priority by RAC in October 2001. Preparation of the Work Statement can begin with target submission for RAC meeting at 2002 Annual Meeting. Steve Taylor to revise and circulate the draft work statement for comments shortly after this meeting, aiming for letter ballot and submission in advance of May 15, 2002 deadline to ASHRAE.
- 3 ***Simplified Procedure for Calculating Exhaust/Intake Separation Distances***  
(**Wilson/Taylor**). This RTAR was submitted as our second priority new project with the 2002-2003 LRRP for August 1, 2001, and was assigned priority by RAC in October 2001. Preparation of the Work Statement can begin with target submission for RAC meeting at 2002 Annual Meeting. Steve Taylor needs help from either David Wilson or another suitable expert. David Wilson will be busy working on the Applications chapter revisions for the next several weeks. Steve will try to get a complete draft ready and circulated to members in advance of the 2002 Annual meeting for discussion there. If comments are provided to Steve promptly, we may be ready to recommend a vote of approval to the main TC at its meeting in Honolulu. John Carter raised several important issues about the contents of exhausts (pollutants), and the needs for dilution and designers' needs. John Carter will help review the work statement draft.
- 4 ***Minimum Acceptable Dilution of Commercial Kitchen Exhaust***  
(**Carter/Cardenal/Ratcliff**). Preparation of RTAR can begin, target submission with 2003-2004 LRRP August 2002 as a priority item, pending a vote by the full TC. No progress to report. Recollections about the discussion at the 2001 Annual meeting. No RTAR expected for Aug 2002 submission.

- | <b>Rank</b> | <b>Title (Authors)</b>  |
|-------------|---|
| 5           | <p><b><i>Ventilation, Leakage and IAQ in Elementary Schools</i></b><br/> <b><i>WS-1257. Indoor Environmental Effects on the Performance of School work by Children</i></b> (new title)<br/> <b>(Reardon/Levin/Wyon/TC2.1/EHC)</b> Solicit volunteers to help serve on PES and/or PMS when it goes out for bid. TC 2.1 is the lead and has prepared this revised / clarified WS-1257. All TC 4.3 members are urged by the chair to review this work statement, and be prepared for a letter ballot due to JTR on February 15, 2001. Jim Reardon should advise TC 2.1 of the lack thus far of formal endorsement by TC 4.3 and pending letter ballot.</p> |
| 6           | <p><b><i>Occupant and Building Factors for Determining Ventilation Rates in Offices</i></b><br/> <b>(Taylor/Fisk)</b> Original idea was to back factors out of existing data. Mendel and Fisk stated that existing data sets not adequate for this project. Revised approach would be too expensive so this item may be dropped for now. NRC's COPE project may produce some information of interest to this idea.</p>  |
| 7           | <p><b><i>Characterization of Infiltration and Ventilation in Mid- and High-Rise Multifamily Buildings</i></b><br/> <b>(Reardon/Hill)</b> No progress to report.</p>   |

### **3) Ad Hoc Research Strategy Committee**

Ad Hoc committee (Yuill, Rock, Ratcliff, Pinkston, Cardenal) established last meeting to review the research strategy of the TC has not met. Will combine with TC research breakfast in Honolulu proposed by Hayter.

### **4) Unsolicited Research Proposals (URPs):**

No unsolicited research proposals are pending.

### **5) Co-sponsorship**

- TC 4.10 “Computational Prediction and Analysis of Natural Ventilation”, (Chen). TC 4.3 Research subc. agreed TC should recommend to Section 4 RAC Liaison that this project not go forward as an ASHRAE-funded project. Jim Reardon will prepare a draft message to our RAC Liaison discouraging the project proposal.
- TC 9.10 Lab fume hoods. Ron Peterson brought from TC 9.10 a suggested project to look at required dilution from exhaust to intakes based on concentration of contaminants in hood exhaust from spill. Peterson to work on RTAR with TC 9.10.

### **6) New research ideas:**

- Dennis Barley recommended research to support Standard 62.2 ventilation rates/systems. Steve Emmerich to work with Barley to develop research list for consideration by SPC 62.2, and to develop RTAR on one subject raised by public review comment.
- In Cincinnati, NAHB asked for research directed to 62.2 issues; Research subc. in turn asked for specific ideas and perhaps one-pagers from NAHB but received none.
- Impact of unvented combustion devices on IAQ in residences (Cardenal).

- Persily to send SSPC 62.1 research ideas to Reardon.

**b. Program (Theresa Weston):**

- Programs at this meeting:
  - Seminar 31 “Criteria for Specifying Acceptable Exhaust/Intake Systems,” chaired by Peterson. Tuesday 10:00.
- Deadlines: February 8 for summer; August 2 for next winter.
- Seminar information requested to be available for chapters for local presentation on web sites. Weston questioned if we wanted to post all seminars. At the very least, we should set criteria for which seminars we should post. It seems that chapters would like to give the seminars themselves, which may not be appropriate. Perhaps they could be posted in pdf format so they cannot be used in presentations directly. Seminar chair should decide if topic is appropriate for posting, raise for TC vote, and obtain author permission.  
Motion (Weston/Boome): TC supports concept of posting seminars. Experiment: Seminar 31 presentations, provided they are approved by (Rock, Reardon, Peterson) and authors, to be posted on web site in pdf format. Limited to Seminar 31 as a trial. Approved 7-0-0-1 (CV)
- Clarification of rules: Program chair cannot be speaker. Authors cannot review other papers on same program.
- New commercialism policy: can include trade-names if they cannot be clarified in another way.
- 75% of programs at this meeting submitted through the Internet. A/V requests must come from authors; program chairs should make sure this happens.
- Honolulu (February 8 deadline):
  - Forum: “What’s new with Standard 62.2,” Bruce Wilcox
  - Symposium: “Ventilation Performance in Mid- and High-Rise Residential Buildings,” Reardon
  - Seminar: “Airflow around Buildings and Wind Pressure Effects - Avoiding Fume Reentry,” Carter
- Chicago (August 2 deadline):
  - Seminar or Symposium: “Ventilation and IAQ in Daycare Centers,” Cardenal
  - Seminar or Forum on status of Standard 62.1, Persily
  - Seminar or Symposium: “Residential Ventilation System Design,” Dianne Griffiths
- Future Programs:
  - Forum: “Revision to Handbook on Ventilation & Infiltration,” Weston
  - Symposium: “Airflow around Buildings,” Glen Schuyler
  - Symposium on Infiltration
  - Seminar: "Exhaust Design Criteria"
  - Seminar on Environmental Tobacco Smoke Control

**Please submit new program ideas directly to Theresa Weston**

**c. Handbook (Mike Ratcliff):**

- Chapters should be kept as practical as possible; many Society members feel they are too theoretical. We will stay on our current 4 year cycle.
- TAC conducted a survey on electronic features for Handbook. Ratcliff submitted five enhancement suggestions. Our chapters should be able to do all requested features, but some may be in future.
- Handbook needs to be addressed at Section 4 breakfast in Honolulu.
- Chapter 43 of Applications 2003. Ratcliff
  - Dilution equations to be revisited based on TC 9.10 project by Wilson
  - Add influences of architectural screens, Carter
  - Inlet design strategies from Rock's research project; design guide will be abbreviated
  - Stack design method may be too lenient and will be readdressed.
  - A flow chart will be added to help designers find appropriate sections for each application
  - To be voted on by TC April 1 via letter ballot and submitted to ASHRAE by April 12 deadline.
- Chapter 15 of Fundamentals 2005: Carter. To be submitted in 2 years (2004)
- Chapter 26 of Fundamentals 2005: Weston. Also for 2004. Weston is looking for replacement as chair (Ian Walker has since agreed to act as coordinator for this activity).

**d. Standards (Gren Yuill):**

TC 4.3 is the cognizant TC for the following standards:

**62-1999/SSPC 62.1**, *Ventilation for/and Acceptable IAQ (in Commercial, Institutional and High-Rise Residential Buildings)*

- Andy Persily not present.

**SPC 62.2P**, *Ventilation and Acceptable IAQ in Low-Rise Residential Buildings*

- Max Sherman, Chair SPC 62.2P reported that the 2<sup>nd</sup> public review received about 400 comments from 135 commenters.
- A 3<sup>rd</sup> limited public review (Independent Substantive Change) was passed by the SSPC in December and awaiting action by the Board Policy Committee and Standards Committee. Publication of ISC expected this spring. No additional ISCs are expected.
- The SSPC will have a spring meeting, tentatively scheduled for April 20-21, to address the companion guideline and future addenda.

**119-1988 (RA94)**, *Air Leakage Performance for Detached Single-Family Residential Buildings*

- Joe Lstiburek had been nominated to chair but SPLS held up his nomination pending a reaffirmation of the nomination by the TC.
- The TC voted 6-0-2 (CV) to reaffirm the nomination of Joe Lstiburek as chair. [Note: SPLS voted on 1/16/02 to approve Joe as chair.]

**136-1993 (RA2001), *A Method of Determining Air Change Rates in Detached Dwellings***

- This standard is in the process of being printed. Apparently Rich Hermans had some comments in 1998 that were not addressed. Gren Yuill will investigate.

**SPC 161P (CoC, TC 9.3 is Lead), *Air Quality Within Commercial Aircraft***

- No report on status.

**Other standards of interest:**

**129-1997 (TC 5.3), *Measuring Air Change Effectiveness***

- No report on status.

**SPC 152P (TC 6.3), *MOT/ Determination of Steady State and Seasonal Efficiency of Residential Thermal Distribution Systems***

- 2<sup>nd</sup> public review complete. All commenters have been responded to and resolved. A few substantive changes were made which will be reviewed via an Independent Substantive Change.

**GPC-15 (TC 4.4) *Design Guide to Avoid Air Leakage and Thermal Bridging***

- No report on status.

**6. Honors (Bernardo Cardenal):**

Bernardo Cardenal not present.

**7. Old Business**

The chair urged increased participation in the subcommittees.

**8. New Business**

The TC was asked by ASHRAE staff to respond to 13 frequently asked technical questions (FAQs) from members. These questions were sent by the chair to TC members for comment; only Gren Yuill and Mike Ratcliff responded. Art McIvor suggested they be sent to SPCs like 62.1 and 62.2 for response where they fell within their purview. After lengthy discussion, the TC decided it should not answer questions since responses may be misapplied, misconstrued as endorsement of a given design, or misconstrued as (or in conflict with) an official interpretation of a standard. The TC passed the following motion (McIvor, Weston): The TC does not feel it is appropriate for the TC to provide responses to these FAQs, 6-0-0 (CV).

**9. Adjournment at 6:45 PM**

**10. Next TC 4.3 meeting:** ASHRAE 2002 Summer Meeting, Honolulu, Hawaii, Hilton Hawaiian Village Hotel, 4:15-6:30 PM, Monday, June 24, 2002.