Draft Agenda -6/14/2018
TOXICITY SUBCOMMITTEE
SSPC-34: Designation & Safety Classification of Refrigerants
Hilton – Grand A – Houston, TX
Sunday, June 24, 2018; 6:30 PM - 10:00 PM

Name	Affiliation	Present
Toxicity Subcommittee Voting Members (PSVM)		
Steve Kujak-Chair (C 2018)	Ingersoll Rand	
Paul Dugard (S 2019)	PHD Consulting	
Gary W. Jepson (C 2019)	Chemours	
George M. Rusch (S 2018)	Consultant	
Jay Kohler (C 2021)	JCI	
Eric Smith (C 2018) / David Rule (alternate - 2018)	IIAR	
Tatsuro Kobayashi (S 2019)	Daikin	
Valerie Shultz (S 2019)	Arkema	
Toxicity Subcommittee Non-voting Members		
Other Guest		

1. CALL TO ORDER

a. Introduction of Members and Guests
b. Quorum Determination
c. Announcements
d. ASHRAE Code of Ethics Review – Attachment

2. AGENDA REVIEW

ACTION: *Approve/revise the agenda for the meeting.*

3. MINUTES OF LAST MEETINGS

ACTION: *Approve/revise the minutes of the Chicago meeting.*

4. ROSTER CHANGES

The Chair will review the current roster.

Sandeep Mukhi has resigned effective before this meeting.
Sherwin Yan has applied for membership to the toxicity subcommittee

ACTION: Chair will ask current members terms ending in 2018 if they would like to extend for another term.

Toxicity Subcommittee (10) [4 PCVM, 4 PSVM, 1 Alternate]

Producer/Refrigerant (6)	***User/Systems*** (2)	***User/Components*** (0)	***General*** (2)
Paul Dugard (S 2019)	Steve Kujak *Chair* (C 2018)		George Rusch (S 2018)
Gary Jepson (C 2019)	Jay Kohler (C 2021)		IIAR[1], Eric Smith (C 2018) / David Rule (alternate - 2018)
Tatsuro Kobayashi (S 2019)			
Valerie Shultz (S 2019)			

ACTION: For information only.

5. APPLICATIONS FOR REFRIGERANT DESIGNATION AND SAFETY CLASSIFICATION

No new applications have been received for action. Only one past application needs review.

Following 4 Applications are still on Hold/Tabled per Applicants request

5.1. **R0064-15-05** from Evan Laganis, Asahi Glass Company, for the proposed single component refrigerant 1,1,2-trifluoroethene (R-1123). Note that this was tabled during the JUN 2015 ASHRAE Conference meeting and a summary of the Subcommittee / Project Committee motions is found in Attachment 7A.

From June 2015 Project Committee Motion:

Table this application until next Society Meeting. Safety Classification is contingent on WEEL limit being assigned by TERA-OARS and Flammability Subcommittee making a recommendation to the PC (Interim Meeting to be scheduled by the Flammability Chair)

regarding known or insufficient information related to safety concerns for disproportionation / energetic polymerization.

The motion passed: 5 -0-4-2 (CNV).
Abstentions:

Sundaresan – we can do better
Senediak – going to require footnote or change to the Standard to accomplish this refrigerant approval
MacLeod – issue of no intention to commercialize this single refrigerant, Standard 34 rule is prohibiting the refrigerant blend from moving forward
Takizawa – helped prepare the application

Wilson abstained - CNV.

O'Leary, Zheng absent.

ACTION: For information only. *Placed on hold at request of applicant. Still tabled per rules.*

5.2. **R0065-15-05** from Evan Laganis, Asahi Glass Company, for the proposed zeotropic refrigerant blend R-1123 / 32 (45.0 / 55.0 by mass% with composition tolerances of ±2.0 / ±2.0 by mass %). Note that this was tabled during the JUN 2015 ASHRAE Conference meeting due to the R-1123 classification issue and a summary of the Subcommittee / Project Committee motions is found in Attachment 7B.

From June 2015 Project Committee motion:

Motion by Kujak / seconded by Senediak to **table this application** until next Society Meeting. Safety Classification is contingent on WEEL limit being assigned to HFO-1123 by TERA-OARS and Flammability Subcommittee making a recommendation to the PC (Interim Meeting to be scheduled by the Flammability Chair) regarding insufficient data / information addressing safety concerns for disproportionation / energetic polymerization.

The Motion passed: 9-0-0-2 (CNV). Wilson abstained - CNV. O'Leary, Zheng absent.

ACTION: For information only. *Placed on hold at request of applicant. Still tabled per rules*

5.3. **R0066-15-05** from Evan Laganis, Asahi Glass Company, for the proposed zeotropic refrigerant blend R-1123 / 32 (40.0 / 60.0 by mass% with composition tolerances of ±2.0 / ±2.0 by mass %). Note that this was tabled during the JUN 2015 ASHRAE Conference meeting due to the R-1123 classification issue and a summary of the Subcommittee / Project Committee motions is found in Attachment 7C.

From June 2015 Project Committee motion:

Motion by Kujak / seconded by Senediak to **table this application** until next Society Meeting. Safety Classification is contingent on WEEL limit being assigned to HFO-1123 by TERA-OARS and Flammability Subcommittee making a recommendation to the PC (Interim Meeting to be scheduled by the Flammability Chair) regarding insufficient data / information addressing safety concerns for disproportionation / energetic polymerization.

The Motion passed: 9-0-0-2 (CNV). Wilson abstained - CNV. O'Leary, Zheng absent.

ACTION: For information only. *Placed on hold at request of applicant. Still tabled per rules*

5.4. **R0089-16-12** from Evan Laganis, AGC Chemicals Americas, Inc. on behalf of Asahi Glass Co., Ltd., for the proposed zeotropic refrigerant blend R-1123 / 32 / 1234yf (19.0 / 55.0 / 26.0 by mass% with composition tolerances of ±2.0 / ±2.0 / ±2.0 by mass %).

ACTION: For information only. *Placed on hold at request of applicant. Still tabled per rules*

5.5. **R0098-18-05** from Samuel Yana Motta, Honeywell Fluorine products, on behalf of Honeywell Inc., for safety classification of the pure fluid trifluoroiodomethane (CF3I).

ACTION: Review relevant content of the application and develop a recommendation for the PC

5.6. **R0099-18-05** from Samuel Yana Motta, Honeywell Fluorine products, on behalf of Honeywell Inc., for safety classification of the blend R32/R125/CF3I with a composition of 49.0/11/5/39.5 % by mass.

ACTION: Review relevant content of the application and develop a recommendation for the PC

5.7. **R0100-18-05** from Jason Juhasz, The Chemours Company, on behalf of The Chemours Company, for safety classification of the pure fluid E- 1,1,1,4,4,4 Hexafluoro -2- Butene (R-1336mzz (E).

ACTION: Review relevant content of the application and develop a recommendation for the PC

6. PUBLICATION PUBLIC REVIEWS

6.1 Update on delay on delayed response to toxicity actions to address Continuous Maintenance Proposal (Gabriele Hoffmann) 34-17-12-0001/001

ACTION: For information only. Sean Cunningham to update subcommittee on actions and issue with slow response. Information below is provided as reference information for the toxicity committee

6.2 Standard 34-2016 Status – an informative summary table for addenda to ASHRAE Standard 34-2016 is in ATTACHMENT 2.

ACTION: For information only. Information below is provided as reference information for the toxicity committee

6.3 Other Publication Public Review Items

Addendum e to Standard 34-2016: Modifications to bring in line with ISO 817 (e.g., molar mass)

Status: Posted as addendum on ASHRAE website

Addendum g to Standard 34-2016: Adds 2L as a distinct classification rather than as a subclassification of 2.

Status: Move to ASHRAE Standards Committee / Board of Directors for approval vote in JUN 2018

Addendum h to Standard 34-2016: Removes the application fee from Standard 34.

Status: Posted as addendum on ASHRAE website

Addendum n to Standard 34-2016: Changes to 6.1.5 and adds new 6.1.5.1 and 6.1.5.2 (makes changes to the toxicity classification procedure (to be based on the nominal formulation of the blend) with the intent to harmonize ASHRAE Standard 34 and ISO).

Status: Posted as addendum on ASHRAE website

ACTION: For information only. Information below is provided as reference information for the toxicity committee

7. CONTINUOUS MAINTENANCE PROPOSALS AND MISCELLANEOUS ITEMS

7.1 Updates to ATEL table and Application Guideline

a. Updates of ATEL table and spreadsheet calculator (Steve Kujak)

New calculator has been posted to the website. Steve Kujak sent the latest calculator with the addition of new and proposed refrigerants for committee review.

ACTION: Review calculator and approve latest updated addition to be added to the SSPC34 website

b. Update of Application toxicity guideline (Steve Kujak)

ACTION: None, latest update has been posted to SSPC34 website

7.2 RCL Inconsistencies in the Standard.

The previous version of the calculator was driving inconsistency because of a calculation error. A small group (Steve, Sean, Gary) per Long Beach actions, was formed and reviewed list and made proposed changes.

ACTION: None, for information only. Latest status will be provided on updating standard

8. WS 1797 DEVELOPMENT OF AN A/B ACUTE TOXICITY CLASSIFICATION FOR REFRIGERANTS

Work statement has been updated based on comments from RAC (Thanks Gary) and TC 3.1 has reapproved the work statement and sent it on to RAC for review again. RAC to review in Houston. PES is Kujak (lead), Kennoy, Rusch, Jepson, Seeton

ACTION: Informational only, no action needed by toxicity committee directly. .

9. OLD BUSINESS

10.1 Rounding and Reporting of Toxicity data

At Atlanta meeting, it was determined that Steve Kujak should develop a CM to consider at the Orlando meeting to resolve in the standard how to round toxicity data. Need to add the method of rounding toxicity data. Practice has been <4 ppm round down >4 ppm round up, plus identify the amount of significant digits to report which is 2. Language around OEL 400 ppm limit will need to be carefully considered. More rounding errors in the standard were found with the ATEL with a number of pure refrigerants and blends.

ACTION: For information only Suggested language: The ATEL, FCL, OEL, and RCL concentrations are rounded to two significant figures, with the second significant figure rounded up when the value is ≥5, and rounded down when the value is <5.

Steve will work with Debbie and ASHRAE committee to determine the path forward for updating the language to be code specific language; also need to work with the flammability subcommittee for verification of the proposed change to FCL, etc.

10.2 Posting of Toxicity Information for Commonly Used Refrigerants

At Atlanta meeting, Sandi Murphy asked what has to be done to post information based on recent, well-reviewed applications on commonly used refrigerants. A small working group was proposed to make templates of relevant information. ASHRAE needs to answer the question on whether or not information submitted in an application is in the public domain. Steve will bring this up to the main SSPC 34 committee.

ACTION: Continue discussion of best path forward. From Orlando: Steve will work with Debbie through ASHRAE to get a ruling for posting this information.

10. NEW BUSINESS

11.1 None

11. NEXT MEETING

January (2019), Atlanta, Georgia

D&N	Saturday, Jan 12	7:00 am – 10:00 am
Flammability	Saturday, Jan 12	10:00 am – 3:00 pm
Toxicology	Sunday, Jan 13	6:30 pm – 10:00 pm
SSPC 34	Monday, Jan 14	6:30 pm – 10:00 pm

12. ADJOURNMENT

ACTION: Motion for Adjournment

Attachment 1

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

1.140.001.1 As members of ASHRAE or participants in ASHRAE committees, we pledge to act with honesty, fairness, courtesy, competence, integrity and respect for others in our conduct.
A. Efforts of the Society, its members, and its bodies shall be directed at all times to enhancing the public health, safety and welfare.
B. Members and organized bodies of the Society shall be good stewards of the world's resources including energy, natural, human and financial resources.
C. Our products and services shall be offered only in areas where our competence and expertise can satisfy the public need.
D. We shall act with care and competence in all activities, using and developing up-to-date knowledge and skills.
E. We shall avoid real or perceived conflicts of interest whenever possible, and disclose them to affected parties when they do exist.
F. The confidentiality of business affairs, proprietary information, intellectual property, procedures, and restricted Society discussions and materials shall be respected.
G. Each member is expected and encouraged to be committed to the code of ethics of his or her own professional or trade association in their nation and area of work.
H. Activities crossing national and cultural boundaries shall respect the ethical codes of the seat of the principal activity.

ATTACHMENT 2

Summary of New Refrigerants to Standard 34 - Informative

ID	applicant	composition	R-name class	conference	notes	status
R0068-15-05	Daikin	R-32 / 125 / 134a (32.5 / 15.0 / 52.5 mass %)	R-407H A1	JUN 2015	Addendum **34w** to 34-2013 / 34-2016 Comment received PC finalized	Posted as addendum on ASHRAE website
R0064-15-05	AGC (Asahi Glass)	1,1,2-trifluoroethene (HFO-1123)	---	JUN 2015	Toxicity data being generated	Tabled
R0065-15-05	AGC (Asahi Glass)	HFO-1123 / R32 (45.0 / 55.0 mass %)	---	JUN 2015	HFO-1123 tox data needed	Tabled
R0066-15-05	AGC (Asahi Glass)	HFO-1123 / R32 (40.0 / 60.0 mass %)	---	JUN 2015	HFO-1123 tox data needed	Tabled
R-0081-16-05	Arkema	R-32 / 1234yf / 1234ze(E) (68.0 / 26.0 / 6.0 mass %)	R-459A A2L	JUN 2016	Addendum **34ak** to 34-2013 / 34-2016 0 comments	Posted as addendum on ASHRAE website
R-0082-16-05	Arkema	R-1234yf / 134a / 152a (77.5 / 8.5 / 14.0 mass %)	R-516A A2L	JUN 2016	Addendum **34b** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R-0083-16-05	Mexichem	R-32 / 1234yf / 1234ze(E) (77.5 / 8.5 / 14.0 mass %)	R-459B A2L	JUN 2016	Addendum **34al** to 34-2013 / 34-2016 0 comments	Posted as addendum on ASHRAE website
R-0084-16-05	Mexichem	R-32 / 125 / 134a / 1234ze(E) (12.0 / 52.0 / 14.0 / 22.0 mass %)	R-460A A1	JUN 2016	Addendum **34am** to 34-2013 / 34-2016 0 comments	Posted as addendum on ASHRAE website
R-0085-16-05	Mexichem	R-32 / 125 / 134a / 1234ze(E)	R-460B A1	JUN 2016	Addendum **34an** to 34-2013 / 34-2016	Posted as addendum on

		(28.0 / 25.0 / 20.0 / 27.0 mass %)			0 comments	ASHRAE website
R-0086-16-05	Behr Refrigerants	R-125 / 143a / 134a / 227ea / 600a) (55.0 / 5.0 / 32.0 / 5.0 / 3.0 mass %)	R-461A A1	JUN 2016	Addendum **34a** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R-0087-16-12	Mexichem	1,1-difluoroethylene	R-1132a A2	JAN 2017	Addendum **34f** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0088-16-12	AGC (Asahi Glass)	(Z)-1-chloro-2,3,3,3-tetrafluoropropene (HFO-1224yd(Z))		JAN 2017	Addendum **34c** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0089-16-12	AGC (Asahi Glass)	HFO-1123 / R32 / 1234yf (19.0 / 55.0 / 26.0 mass %)	---	JAN 2017	HFO-1123 tox data needed	Tabled until JUN 2017
R0090-16-12	ICOOL Ningbo	R-32 / 125 / 143a / 134a / 600 (9.0 / 42.0 / 2.0 / 44.0 / 3.0 mass %)	R-462A A2	JAN 2017	Addendum **34d** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0091-16-12	Jiangsu Freeze Environmental Protection and New Material Co, Ltd	R-290 / 600a (95.0 / 5.0 mass %)	R-436C (tentative) A3 (tentative)	JAN 2017	Addendum **34o** to 34-2016 0 comments	Move to ASHRAE Standards Committee / Board of Directors for approval vote in JUN 2018
R0092-17-05	Chemours	R-744 / 32 / 125 / 1234yf / 134a (6.0 / 36.0 / 30.0 / 14.0 / 14.0 mass%)	R-463A (tentative) A1 (tentative)	JUN 2017	Addendum **34i** to 34-2016 1 comment	Move to ASHRAE Standards Committee / Board of Directors for approval vote in JUN 2018
R0093-17-05	Arkema	R-32 / 290 / 1234yf (21.0 / 7.9 / 71.1 mass%)	R-465A A2	JUN 2017	Addendum **34m** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0094-17-05	Trio Gas Products	R-32 / 125 / 134a / 1234ze(E) (2.5 / 2.5 / 46.0 / 49.0 mass %)	R-460C A1	JUN 2017	Addendum **34j** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0095-17-05	Refrigerant Solutions	R-32 / 125 / 1234ze(E) / 227ea (27.0 / 27.0 / 40.0	R-464A A1	JUN 2017	Addendum **34k** to 34-2016	Posted as addendum on ASHRAE website

		/ 6.0 mass %)			0 comments	
R0096-17-05	Daikin	R-32 / 125 / 134a (19.5 / 8.5 / 72.0 mass %)	R-407I A1	JUN 2017	Addendum **34I** to 34-2016 0 comments	Posted as addendum on ASHRAE website
R0097-17-05	Honeywell	R-1234ze(E) / 227ea (91.1 / 8.9 mass %) azeotrope		JUN 2017		In process