

TC 2.3 - Gaseous Contaminants/Removal Equipment
Chapter 47 – Air Cleaners for Gaseous Contaminants in HVAC Applications- 2023
Handbook Sub-Committee Minutes
Zoom meeting Wednesday, June 9, 2:00 – 3:00 pm EDT

1. The meeting was called to order at 2:01 pm
2. Gemma agreed to take notes for the Minutes and to determine who attended the meeting.

Participants were:

Victoria Binz,	Marilyn Listvan,
KJ Choi,	Jurgen Lobert,
Len Duello,	Chris Muller,
Mick Flom,	Caitlin Naske,
Sanjeev Hingorani,	Kathleen Owen,
Gemma Kerr,	Scott Parris,
Brian Krafthefer,	David Schaaf.
Kevin Kwong,	Michael Sherber
Chang-Seo Lee,	

3. Nothing was done on Chapter 11 “Air Contaminants”, in ASHRAE Fundamentals, at this meeting. Michael Sherber is the lead on this Chapter with help from Brian and Gemma.
4. Chapter 47 needs to be submitted to ASHRAE by July 2022. Revision ‘D’ was distributed before this meeting and Brian will send out Revision ‘E’ by the end of June.
5. Chapter 47 – Follow-up to May meeting
 - a. The Terminology and acronyms section was discussed in May and changes agreed. Kathleen has moved the yellow highlighted paragraphs to relevant spots later in the chapter;
 - b. Brian Krafthefer is continuing to check equations (5) and (7) against their counterparts in Standard 62.1 and will update before our June meeting. Chang Seo Lee said that Std. 62.1 does not break it down into the number of sources that we do in our Handbook Chapter.
 - c. KJ Choi responded that he sent chapters to a few people and they told him it would take a month or more to respond. There was no update;
 - d. Update on reviews of Chapter Sections (individual comments were discussed under Agenda item 5 – see below).
 1. Chang Seo Lee has reviewed Table 3. She has found new references for emissions which are dual units. It was agreed to include these and keep the old ones also. Chang Seo will do the dual units calculation for the old references;
 2. Gaseous Contaminants- It was agreed that we change this to “Gaseous Emissions and Mass Balance Analysis”. Brian will implement this. Chang Seo Lee said she would review Section 1, no update on this;
 3. Problem Assessment – Brian Krafthefer and Mike Sherber to review Section 2. Brian has done his review;
 4. Contaminant Reduction Strategies, no update;
 5. Installation, Start-Up, and Commissioning – David Schaaf said he will review Section 4.
 6. Operation and Maintenance – Caitlin has almost completed review of Section 5.
 7. Testing Media, Equipment, and Systems - Caitlin has almost completed review of Section 6.
 8. Brian reported that the ASHRAE Handbook Committee approved the new chapter on portable air cleaners. However there was not a quorum so the vote has to be repeated in August.

9. KJ said he needs more time to combine technologies.
 10. Brian said that we should delay making changes to the references section until the next meeting.
- e. The chapter has received some reviews (Kathleen and Chang-Seo) and the comments and suggestions from these are included in Revision D. The remaining time of the meeting was spent going through these to decide on action to take. Details are shown below:
- i. Below Table 3, add mention of Standard 62.1;
 - ii. Below Table 5, Chang-Seo will check the CONTAM reference;
 - iii. Problem assessment, Kathleen wants to include odor complaints as part of the assessment. Gemma will look at this paragraph and revise;
 - iv. At end Section 3, change GPC 27 to Guideline 27;
 - v. Under Section 4 - Contaminant Reduction Strategies, add text on ASHRAE IAQ Guideline and also add the reference;
 - vi. Section 4, confusion about whether ventilation air is the same as outdoor air, revise text to clarify;
 - vii. Section 5, take “Ventilation” out of section title;
 - viii. Re. packed beds, Caitlin pointed out that they are mainly used for industrial applications with loose fill media or impregnated pleated filters more commonly used in commercial applications. She will address this in her chapter review;
 - ix. Under Figure 4, query adding info about a study of Kathleen’s that showed the impact of RH on toluene adsorption starts at 65% rather than 50%. Chang-Seo will look for additional references on this topic;
 - x. Section 5, Ozone paragraph should be revised. Caitlin will look for newer references and will revise with help from Sanjeev;
 - xi. Section 5, Odor masking paragraph. Need to change this since the process is not actually contaminant removal. Chang-Seo will create a table showing these products as sources. Gemma and Marilyn will rewrite this part with mention of improved perceptions;
 - xii. Section 6, paragraph on effect of media size is not accurate. Second sentence should be deleted. Caitlin will revise;
 - xiii. Section 7, query whether “Air Cleaner System Design” is a valid title. Brian will review and change if necessary;
 - xiv. Section 7, VRP and IAQP: Gemma to add text to make the difference clearer and to add an example;
 - xv. Under figure 6, “different uses of the same application”, unclear what this means. Brian will look at clarifying the text.

We ran out of time here, did not finish the discussion of comments.

- f. Brian is waiting for the remainder of these reviews to come in.
- g. Table permissions were discussed – Figures permissions were not.

~~Caitlin~~ earlier informed us that numbers and references from the EPA and other government organizations do not need permissions. (This was Tori)

Table 2 - Brian asked if we needed permissions for Table 2. The consensus was that it does not since it is compounded from multiple references. Chang-Seo will look for some newer citations.

Table 5 – should add information that the measurements were taken in university classrooms and the activity level was likely light.

Table 6 – this was updated in 2009 and again in 2016. The data is from the BASE study and should be kept.

6. Full reviews of the chapter is requested after Revision 'E' is circulated
7. Future meeting time: Video meeting will be held in mid - August, 2021
8. Minutes will be sent in from video meetings.
9. The meeting was adjourned at 3:05 pm