From:	McCambridge, Michael
To:	Brown, Don
Cc:	Powell, Mark; James, Jason; Tipsord, Marie
Subject:	FW: Region 5 Questions regarding SIP for Identical in Substance Rulemaking R17-2
Date:	Thursday, September 21, 2017 11:28:07 AM

Don, Please enter this e-mail exchange into docket **R17-11** as a public comment.

From: McCambridge, Michael
Sent: Monday, July 10, 2017 1:58 PM
To: Godiksen, Annet <Annet.Godiksen@Illinois.gov>
Cc: Powell, Mark <Mark.Powell@Illinois.gov>; Tipsord, Marie <Marie.Tipsord@illinois.gov>; McGill, Richard <Richard.McGill@illinois.gov>; Keenan, Gerald <Gerald.Keenan@illinois.gov>
Subject: RE: Region 5 Questions regarding SIP for Identical in Substance Rulemaking R17-2

I respond to your questions of last week. The responses appear below in red font.

If you need more from me, ask.

Off the immediate subject, Proposals for Public Comment in the docket R17-10 NAAQS and docket R17-11 Definition of VOM updates should soon appear on the Board's agenda for USEPA amendments during the second half of 2016. During the period, USEPA undertook the following actions (briefly described without consideration of any Board action that may be necessary in response):

NAAQS:

July 13, 2016 (81 Fed. Reg. 45284): USEPA designated one new FRM for PM_{10}, one new FRM for sulfur dioxide (SO_2), two new FEMs for $PM_{2.5}$, one new FEM for PM_{10}, and one new FEM for $PM_{10-2.5}$ in ambient air.

August 11, 2016 (81 Fed. Reg. 53006): USEPA adopted a direct final rule to make a technical correction to an equation relating to data handling conventions for demonstrating compliance with the 2012 NAAQS for $PM_{2.5}$.No Board action will be required based on this direct final rule because USEPA withdrew it on September 29, 2016 (see below).

August 24, 2016 (81 Fed. Reg. 58010): USEPA added an anti-

backsliding provision to the 1997 NAAQS for $PM_{2.5}$.

September 29, 2016 (81 Fed. Reg. 66823): USEPA withdrew the September 29, 2016 direct final rule making a technical correction to data handling conventions for the 2012 NAAQS for $PM_{2.5}$.This obviated Board action on the September 29, 2016 direct final rule.

October 3, 2016 (81 Fed. Reg. 68216): USEPA revised the NAAQS provisions relating to excluding ambient air monitoring data influenced by exceptional events.

October 18, 2016 (81 Fed. Reg. 71906): USEPA determined to retain the existing NAAQS for lead.

November 28, 2016 (81 Fed. Reg. 85561): USEPA designated one new FEM for nitrogen oxides (NO_X) in ambient air.

Subsequent to the NAAQS update period included in docket R17-10, USEPA undertook additional actions that the Board may include in the R17-10 NAAQS update:

March 20, 2017 (82 Fed. Reg. 14325): USEPA made a technical correction to the NAAQS for fine particulates. USEPA corrected in an equation used to calculate compliance.

May 11, 2017 (82 Fed. Reg. 21995): USEPA designated one new FEM for nitrogen oxides (NO_X) in ambient air.

June 16, 2017: USEPA issued an updated *List of Designated Reference and Equivalent Methods*, which includes all federal reference methods (FRMs) and federal designated method (FEMs) designated by USEPA through June 16.2017.

Definition of VOM:

August 1, 2016 (81 Fed. Reg. 50330): USEPA excluded a new hydrofluoroether from the definition of VOM.

I will contact you before the proposals appear before the Board to arrange a mutually convenient hearing date.

From: Godiksen, Annet
Sent: Wednesday, July 05, 2017 5:17 PM
To: McCambridge, Michael <Michael.McCambridge@illinois.gov>
Subject: Region 5 Questions regarding SIP for Identical in Substance Rulemaking R17-2

Hey Mike,

As we discussed on the phone today, Region 5 has questions regarding the SIP submittal for the Identical in Substance Rulemaking R17-2. Here are the topics where we need further elaboration and clarification and a couple of items that need to be corrected.

1. The Board's Opinion and Order discusses that 3 sentences in 211.7150(a) were to be deleted, including a cross reference to the deleted subsection 211.7150(e). As we discussed, it was an oversight and that in actuality only 2 sentences are meant to be deleted. Please let me know which sentences you meant to delete and why they are being deleted.

   Thank you for pointing out the omission. I inadvertently omitted the deletion from the amendments. The text that should have been deleted is the following:

   > USEPA has excluded the listed negligibly-reactive compounds from the definition of VOM for purposes of VOM limitations or VOM content requirements. However, USEPA has required that certain of these compounds be considered VOM for purposes of recordkeeping, emissions reporting, and inventory requirements, as described in subsection (e) of this Section.

   I will add this deletion to the upcoming R17-11 Definition of VOM update, which the Board should propose in the near future.

2. Region 5 would like additional information to clarify why the state deviated from the Federal text list of excluded compounds identified by USEPA in 40 CFR 51.100(s) : 1) to add or replace the chemical compound name with a IUPAC name, 2) eliminate the structural formula where they appeared, and 3) add the Chemical Abstract Service (CAS) numbers for each individual chemical compound ;

The Board's opinion and order or January 19, 2017 in R17-2 explains that ambiguity results from use of common chemical names. At page 5, that opinion briefly explains as follows:

> Two examples of ambiguous chemical names from the list of excluded compounds were chlorodifluoroethane and dichlorofluoroethane. These were the names that USEPA originally used to identify the excluded compounds. See 54 Fed. Reg. 1987, 1988 (Jan. 18, 1989). Each name describes three chemical isomers. USEPA later more specifically named the two chemicals 1,1-dichloro-1-fluoroethane and 1-chloro-1,1-difluoroethane, to each embrace a single isomer. See 40 C.F.R. 51.100(s)(1) (1992).
>
> There are several conventions for identifying chemicals with varying precision. For example, acetone is a common name for an excluded compound that also bears the common name dimethylketone. The International Union of Pure and Applied Chemistry (IUPAC) has developed a system of nomenclature for chemical compounds. Acetone bears the IUPAC name propan-2-one. USEPA lists this compound as "acetone" in 40 C.F.R. 51.100(s)(1) (2016). The Board parenthetically added "dimethyl ketone or propan-2-one" in corresponding 35 Ill. Adm. Code 211.7150.
>
> For the purpose of obtaining greater certainty in chemical identification, chemists have developed various non-name identifiers. The identifier of interest to the Board is the Chemical Abstract Service (CAS) number developed by the American Chemical Society. CAS numbers are in widespread use, and a single CAS number identifies only one chemical isomer.
>
> Returning to the examples of chlorodifluoroethane and dichlorofluoroethane, the IUPAC names of the isomers and their CAS numbers are as follows:

Chlorodifluoroethane isomers:

1-chloro-1,1-difluoroethane (CAS no. 75-68-3) —the excluded isomer

1-chloro-1,2-difluoroethane (CAS no. 338-64-7)

1-chloro-2,2-difluoroethane (CAS no. 338-65-8)

chlorodifluoroethane mixed isomers (CAS no. 25497-29-4)

Dichlorofluoroethane isomers:

1,1-dichloro-1-fluoroethane (CAS no. 1717-00-6)—the excluded isomer

1,1-dichloro-2-fluoroethane (CAS no. 25167-88-8)

1,2-dichlorofluoroethane (CAS no. 430-57-9)

I can add little more than this to the Board's discussion. In the list of exempted compounds there are 59 chemical compounds that are sufficiently specifically identified that association with a specific CAS Registry number is possible. In fact, USEPA stated the CAS numbers for 40 of those compounds in the *Federal Register* notices adopting their exclusion from definition as VOM. Finding the CAS numbers for the remaining 19 compounds was a simple matter on the Internet. The NIST Chemistry WebBook, SRD 69) U.S. Department of Commerce, National Institute of Standards and Technology and ChemIDplus or TOXNET (National Institutes for Health, U.S. National Library of Medicine) are two excellent sources for both CAS numbers and IUPAC names.

I can add little more than this to the Board's discussion. The Board's discussion highlights an example of the shortcomings of using common chemical names, and a structural formula does not provide a basis for identifying a chemical compound without using the formula to derive a name. It a need for greater precision and certainty in identification of chemical compounds and isomers that the CAS Registry and IUPAC nomenclature arose. CAS numbers identify

chemicals, isomers, and mixtures with precision and are easy to look up. IUPAC nomenclature gives precise chemical composition, structural, and isomeric identification.

The Board's deviations added precision to the list of excluded chemical compounds. USEPA's inquiry cites no way in which the use of IUPAC nomenclature substantively detracts or deviates from the federal listing of excluded compounds. The Board has parenthetically retained the USEPA chemical names and commercial identifiers with the added IUPAC names in the list, with the exception of deleting the four structural formulae used by USEPA and primary identifiers: HCF_2OCF_2H, $HCF_2OCF_2OCF_2H$, $HCF_2OCF_2CF_2OCF_2H$, and $HCF_2OCF_2OCF_2CF_2OCF_2H$. (The Board also deleted the structural formulae that USEPA used as parenthetical identifiers: $C_4F_9OCH_3$, $(CF_3)_2CFCF_2OCH_3$, $C_4F_9OC_2H5$, $(CF_3)_2CFCF_2OC_2H_5$, and n-$C_3F_7OCH_3$.)

3. Region 5 also noted an error regarding a CAS number in the final rule's list of chemical compounds in 211.7150(a) for the chemical compound identified as (1E)-1-Chloro-3,3,3-trifluoroprop--l-ene (trans-1-chloro-3,3,3-trifluoroprop-lene, CAS number 29118-24-9). In the state's SIP submittal, in attachment #7, Table 6 (on the last page), it shows that the CAS number added for this compound should be CAS number 102687-65-0. Please let me know what the corrected citation should be. ;

Thank you for noting the inconsistency. There was indeed an error in the text of the amendments. The correct CAS Registry number for (1*E*)-1-chloro-3,3,3-trifluoroprop-1-ene is 102687-65-0. CAS number 29118-24-9 is the identifier for (1E)-1,3,3,3-tetrafluoroethane, also an excluded compound in the list.

I will add this deletion to the upcoming R17-11 Definition of VOM update, which the Board should propose in the near future.

Region 5 is also asking for clarification to verify where, and how Illinois derived the CAS numbers added for each individual compound it listed in 221.7150 (a).

See the answer to the first query above. Other sources include

Canadian Center for Occupational Health and Safety Common Chemistry (ACS), LookChem (Chinese—marketing-oriented), ChemNet CAS (Chinese—marketing-oriented), Guidechem (Chinese—marketing-oriented), Chemical Book (Chinese—marketing-oriented), ChemSpider (Royal Society of Chemistry), some federal regulations (*e.g.*, 40 C.F.R. 63, 68, 116, 261, 704 & 799), and Wikipedia. When using some of these sources, however, it is desirable to gain verification from a second source.

Thank you for your help in clarifying these issues. Let me know if you have any questions.

Annet

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