

Dr. Koziel email (dated May 4, 2005) to Dave Warner.txt

From: Dave Warner
Sent: Wednesday, May 04, 2005 5:30 PM
To: Bill Descary (E-mail); Carolina Simunovic (E-mail); Dave Warner;
David Grantz (E-mail); Deanne Meyer (E-mail); Denise Mullinax (E-mail);
Diane Bailey (E-mail); J. P. Cativiela (E-mail); James Sweet; John
Watson (E-mail); Kevin D. Hamilton (E-mail); Paul Martin (E-mail)
Cc: Sheraz Gill; Rick McVaigh; Carlos Garcia
Subject: FW: VFA work for Dr. Mitloehner/San Joaquin Valley Air
Pollution Control District

FYI...

-----Original Message-----

From: Jacek Koziel [mailto:koziel@iastate.edu]
Sent: Wednesday, May 04, 2005 4:15 PM
To: Dave Warner
Cc: Mitloehner, Frank M.
Subject: RE: VFA work for Dr. Mitloehner/San Joaquin Valley Air Pollution
Control District

Dear Mr. Warner,

Thank you for contacting me. Here is my response to the 2 issues you brought up:
1. The results should not be used to develop an emissions factor for volatile
fatty acids (VFAs) because the data lacks background concentrations (Cin) of VFAs.
In general terms:

$Emissions = (Air\ flow) * (C_{out} - C_{in})$.

We did not measure "concentration in inlet" (Cin). Thus, an emission factor based
only on concentrations measured in the outlet(Cout)could be overestimated if Cin are
high. Because, Dr. Mittloehner's chambers are located near each other and near an
outside feedlot, it is quite possible that the Cin need to be accounted for, i.e.,
they may not be negligible.

2. VFAs have a high affinity for adsorption to any surfaces (even stainless
steel, Teflon or glass). Adsorption to tubing can result in underestimation of
measured concentrations.

Please let me know if you have any further questions.

With kind regards,
Jacek Koziel

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-----Original Message-----

From: Dave Warner [mailto:dave.warner@valleyair.org]
Sent: Tuesday, May 03, 2005 7:46 PM
To: 'koziel@iastate.edu'
Subject: VFA work for Dr. Mitloehner/San Joaquin Valley Air Pollution
Control District

Dr. Koziel, my name is Dave Warner. I'm the Director of Permit Services for the San
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Joaquin Valley APCD, and the chair of the Dairy Permitting Advisory Group (DPAG) that has been working with Dr. Mitloehner and other researchers to try to determine, as well as can be done, VOC emissions factors for California dairies.

As you are undoubtedly aware, the shortage of dairy VOC emissions information makes our task difficult, and one of the areas with the least amount of information is that of VFA emissions. You are the acknowledged expert in the area of VFA measurement, and I'd very much appreciate your advice on a couple of issues:

1. Dr. Mitloehner has reported to the DPAG that he sampled VFAs from his environmental cow chambers into open-ended sorbent tubes (no sampling lines), and that you analyzed the VFA concentrations from those samples. He reported the results of those analyses, but cautioned that you stated that the results should not be used to estimate VFA emission factors. He has explained a couple of reasons associated with the sampling side of the equation, but my particular question for you is what problems existed with your side of the equation, the analytical side, that would prevent us from accepting the calculated concentrations at face value (given that there was significant variance, and assuming that the sampling-side issues can be settled)? Can you please explain the problems you experienced with your analysis that led to your conclusion that the results should not be used?

2. Dr. Mitloehner and his associate Dr. Goldstein have explained that VFAs are "sticky" and sampling techniques that use lengths of tubing between the sampled environment and the sorbent tube (as opposed to sampling directly into the open-ended sorbent tube) would likely result in an under accounting of VFA emissions due to adherence to the sampling line walls.

Do

you concur with this statement?

Thank you very much. I know it is asking a lot of you to respond to these questions, but your expertise in this area is widely recognized, so your input will be very valuable.

Dave Warner
Chair, DPAG
Director of Permit Services, SJVAPCD