

PM 2.5 Comments and questions on the DRAFT Integrated N Committee report

Cliff Snyder

to:

Angela Nugent

03/18/2011 01:23 PM

Cc:

Thomas Armitage

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Dear Dr. Nugent,

Per the contact information provided by Dr. Thomas Armitage, we are writing you since you are the Designated Federal Officer for the EPA SAB Integrated Nitrogen Committee, to call your attention to questions and science supporting certain statements in the DRAFT Integrated Nitrogen Committee report found at:

<http://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/c83c30afa4656bea85256ea10047e1e1!OpenDocument&TableRow=2.2#2>.

We found the following statements on page 63, in looking over the current draft of the Integrated N Committee report :

Ammonia is a substantial component of PM2.5 in most polluted areas of the United States at most times. While it is true that reducing NH3 emissions might increase the acidity of aerosols and precipitation, the net effect of NH3 on aquatic and terrestrial ecosystems is to increase acidity. After being deposited onto the earth's surface, NH4+ is under most circumstances quickly nitrified, increasing the acidity of soils and waters. The Committee is unaware of any evidence that NH3 reduces the toxicity of atmospheric aerosols or that high concentrations of NH3 occur naturally over any substantive area of the United States. Lower NH3 emissions will lower PM2.5 concentrations. Such reductions in PM2.5 concentrations have been linked to reductions in morbidity and mortality.

The last sentence is essentially repeated on page 93 of the draft report also:

Lower NH3 emissions will lower PM2.5 concentrations. Such reductions in PM2.5 concentrations have been linked to reductions in morbidity and mortality. (Finding #17)

We have received questions about the scientific evidence supporting the linkages between ammonia emission and PM2.5 formation; especially the portion of atmospheric ammonia emitted by agriculture, and the portion of

PM2.5 that would be attributed to these agriculture emissions of ammonia. Also, given that the specific components in PM2.5 that affect human health are not clear, we wonder if it is correct to suggest, as the above wording does, that the ammonia emission-induced fraction of PM2.5 has a causal link to mortality rates? The following statement from Brook et al (2010) p. 2364 seems to suggest otherwise: The importance of other specific sources, regional differences in pollution composition, and other specific constituents remains less clear. However, toxicological studies have identified several transition metals (eg, iron, vanadium, nickel, copper, and zinc), organic carbon species, semiquinones, and endotoxin as specific PM-related components capable of prompting oxidative stress and inflammation and thus likely imparting biological harm.

Brook, R.D., Rajagopalan, S., Pope, C.A. III, Brook, J.R., Bhatnagar, A., Diez-Roux, A.V., Holguin, F., Hong, Y., Luepker, R.V., Mittleman, M.A., Peters, A., Siscovick, D., Smith, S.C. Jr, Whitsel, L., Kaufman, J.D. 2010. Particulate matter air pollution and cardiovascular disease: an update to the scientific statement from the American Heart Association. *Circulation* 121:2331-2378.

Were the citations supporting the ammonia emissions and PM2.5 statements in the INC draft report, noted above, inadvertently left out of the text? Or are the references shown in Table 1 on page xix (and pasted below) the supporting science?

Mokdad, A.H., J.S. Marks, D.F. Stroup, and J.L. Gerberding. 2004. Actual causes of death in the United States, 2000. *Journal of the American Medical Association* 291:1238-1245.

Ezzati M., A.D. Lopez, A. Rodgers, and C.J.L. Murray. 2004. Comparative quantification of health risks: global and regional burden of disease attributable to selected major risk factors. World Health Organization, Geneva.

References supporting the ammonia links to PM2.5 and the specific mechanisms associated with morbidity and reductions in mortality, should be clearly referenced in the Integrated Nitrogen Committee report. We see mention of "urban air pollution" in World Health Organization reports, and some text in those reports pointing to PM2.5. However, we do not understand how much of the urban air PM2.5 can be attributed to agricultural ammonia emissions. Also ..... a minor point .....but the references in the "F" section do not appear to be properly alphabetized (e.g the Fixen citations are not grouped together).

Sincerely,

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