

**COMMENTS REGARDING CORRECTIONS OF HREA BENMAP RESULTS
(FOR THE MAY 28, 2014 CASAC TELECONFERENCE ON THE OZONE NAAQS)**

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In my comments before CASAC at the March 25-27, 2014 meetings on the second drafts of the *Health Risk and Exposure Assessment* (HREA) and *Policy Assessment* (PA) documents, I noted that all of the total risk estimates for urban study areas in the HREA Chapter 7 (and its appendices) were incorrect. On April 28, 2014, EPA released a memo containing corrections to the tables that appeared in Chapter 7,¹ and on May 9, 2014, EPA released a memo containing corrections to tables in the appendices to Chapter 7.²

This document provides a couple of brief points about results in the May 9 corrections memo. *I have submitted a separate set of written comments regarding the question of a threshold in the long-term mortality risk estimates and refer readers to that document as well.*

First, I continue to find new errors in results in these two corrections memos:

- Table 7C-1 in the May 9 memo, which reports estimates of short-term mortality risks in the inner-city areas of the 12 urban study areas, has incorrect confidence ranges. The lower bounds are stated incorrectly for every city. Furthermore, 4 of the cities that have statistically insignificant associations are reported to have lower bounds that are positive, which implies to a reader who is not familiar with the raw coefficients that the associations in those cities are statistically significant.³
- Table 7-12 in the April 28 memo, which reports long-term respiratory mortality at 75 ppb and changes in that risk at lower alternative standards also has incorrect lower bounds, which are all nearly twice as high as they should be.

These tables should be corrected again and all other tables in these two corrections memos should be reviewed for further such errors. Because of the continuing errors in the corrections memos, CASAC should see and review third drafts of the HREA and PA that are properly corrected and checked.

¹ "Corrections to Estimates of Epidemiology-based Mortality and Morbidity Risks Presented in the *Health Risk and Exposure Assessment for Ozone, Second External Review Draft.*" Memorandum from Erika Sasser, U.S. Environmental Protection Agency to Holly Stallworth, EPA Science Advisory Board, April 28, 2014.

² "Request for Revised Ozone HREA Chapter 7 Appendix Tables" Memorandum from Erika Sasser, U.S. Environmental Protection Agency to Holly Stallworth, EPA Science Advisory Board, May 9, 2014.

³ The cities that incorrectly show positive lower bounds that should be negative are Baltimore, Cleveland, Los Angeles and St. Louis. However, *all 12 cities'* lower bounds are incorrect.

Second, my March comments on the HREA and PA⁴ noted that the HREA shows that mortality and morbidity risks actually increase as the NAAQS levels decrease, relative to base risks under recent ozone conditions. That result continues to be present after the corrections. Table 1 (on the next page of this document) shows the percent change in risk at the 75, 70, 65 and 60 ppb levels in each of the 12 inner city areas, stated relative to their respective base risks. It is derived from the computations of mean risk estimates in Table 7C-1, using the precise results that I calculated using BenMAP, rather than rounded data that EPA reports. I confirmed that my precise estimates are consistent with the rounded values in Table 7C-1 of the May 9 memo.⁵

Table 1 shows that the majority of the cities' changes are in the positive direction, indicating that EPA estimates risk to be higher under those alternative standards than their base levels. CASAC should require EPA to provide a more complete assessment in the HREA of the differences in risks projected in the inner cities versus the outer areas, as this is an important policy consideration that should be discussed in the PA document.

⁴ Anne E. Smith, "Technical Comments on Second External Review Drafts of the *Health Risk and Exposure Assessment for Ozone and Policy Assessment for the Review of the Ozone NAAQS*. Prepared on behalf of Utility Air Regulatory Group and submitted to docket, March 24, 2014.

⁵ In checking my BenMAP results against the estimates in the May 9 version of Table 7C-1, I identified one discrepancy. The May 9 Table 7C-1 reports risk in New York City for 65 ppb to be rounded to 1200. My estimate is 1279, which would round to 1300 if reported in the format used by EPA for Table 7C-1. Since all my other numbers match, I believe that the number in EPA's corrections memo is incorrect.

Table 1. Graph of Risks Stated as Percent Changes Relative to Base Risk: Short-Term Mortality in Epidemiology-Study Areas (Using Corrected BenMAP Calculations Matching Results for Table 7C-1 in the May 9, 2014 corrections memo)

