Chairman's Proposed Revisions to Council Draft Report (dated October 4. 2010)
17 November 2010

1. Draft letter to Administrator, 1st paragraph of p. 2.

Replace "No analysis of the scope and complexity of the 812 Study is ever perfect" with "No analysis with the scope and complexity of the 812 Study is ever perfect"

2. p. 5, lines 5-8

Replace:

- **Further discuss the possibility that PM components are differentially toxic**. In the Summary Report, it might be useful to report how the population-weighted average $PM_{2.5}$ composition differs between the with- and without-CAAA scenarios (nationally and perhaps regionally) to address how much differential toxicity could affect the results.

with

- **Provide further discussion of the implications of possible differential toxicity of PM components for the estimated benefits.** It could be useful to report how the population-weighted average $PM_{2.5}$ composition differs between the with- and without-CAAA scenarios (nationally and perhaps regionally). If there is little difference, differential toxicity should not significantly affect the estimated benefits, but if composition changes substantially then the possibility of differential toxicity could be a significant source of uncertainty about the benefits. A brief summary of the evidence concerning differential toxicity could be presented in a FAQ or text box.

3. p. 5, lines 9-14

Replace

- **Clarify that there are uncertainties associated with estimates of costs, as well as benefits**. It is striking that the summary of non-quantified effects (Exhibit 17) and key uncertainties (Exhibit 18) include nearly only benefits. There are uncertainties about costs beyond the one included in Exhibit 18 (unidentified measures for NAAQS compliance), e.g., treatment of learning-curve effects, unquantified quality degradation of products. Those that are judged most important should be identified.

with

- **Clarify that there are uncertainties associated with estimates of costs, as well as with benefits**. It is striking that all the non-quantified effects (summarized in Exhibit 17) and all but one of the key uncertainties (summarized in Exhibit 18) pertain to estimated benefits. Uncertain factors that affect cost estimates, in addition to the one listed in Exhibit 18 (unidentified measures for NAAQS compliance) include treatment of

learning-curve effects and unquantified degradation in the quality of reformulated products. Those that are judged most important should be identified.

4. p. 7, lines 26-31

Replace

The Council suggests including more discussion of the evidence related to differential toxicity of $PM_{2.5}$ components, perhaps integrated with information on how PM composition differs between the with- and without-CAAA scenarios. The current discussion should be expanded to include references that provide evidence of heterogeneity among effect estimates by PM type and to note that this is an ongoing area of research. Future efforts may be able to quantitatively address this issue as the scientific literature develops.

with

The Council suggests including more discussion of the evidence related to possible differential toxicity of $PM_{2.5}$ components and the implications for estimated benefits. This discussion should present the core argument for why quantitative sensitivity analysis of differential toxicity is not incorporated. It could be enhanced by presenting information on how PM composition differs between the with- and without-CAAA scenarios and explaining how this difference influences the extent to which possible differences in toxicity could affect benefits. Much of the necessary material for this discussion is presented in the Uncertainty Analysis report (citation), which should be referenced.

5. p. 8, lines 14-19

Delete (these are moved to p. 9)

6. p. 9, lines 10-13

Replace

The information on benefits per ton emitted from different sources is useful. It would be improved by providing a short explanation of why the sectors rank as they do, as it seems counterintuitive that EGU emissions have the highest benefit per ton (rather than sources that are closer to populations).

with

The information on benefits per ton emitted from different sources is useful. It would be improved by providing a short explanation of why the sectors rank as they do, as it seems counterintuitive that EGU emissions have a higher benefit per ton than sources that emit closer to ground level and are closer to populations. This result may be related to the fact that all

pollutants are aggregated into the denominators of these terms, which is a confusing and potentially misleading presentation. If stratification by emitted pollutants is not possible, these results should be explained carefully to avoid misinterpretation.

It could be useful to compare the benefits estimated in this report with estimates that could be derived for the appropriate changes in air quality using econometric studies of housing markets (Chay and Greenstone, 2005; Bayer et al., 2009). In making this comparison, it should be recognized that the econometric studies assume that the implications of air pollution are understood and incorporated into market prices and that, in principle, they estimate the full benefits to homeowners of improved residential air quality, including changes in mortality, morbidity, visibility, materials damage, and perhaps others. A difficulty in making the comparison is that these studies have used pollution metrics other than $PM_{2.5}$.

7. p. 11, lines 5-12

Replace

In order to provide a more comprehensive understanding of the effects of the CAAA and other air-quality regulations, EPA should stimulate more research on the effects of air quality on managed and unmanaged ecosystems, on methods to comprehensively quantify human exposure to air pollutants whose concentrations vary dramatically in time and space (HAPs, but also $PM_{2.5}$ near traffic and other sources), and to improve estimates of the monetary value of changes in these endpoints. In addition, future studies that assess effects over multi-decadal periods should consider the effects of climate change, which can alter atmospheric concentrations of pollutants and the distribution, sensitivity, and other characteristics of agricultural and ecosystem receptors.

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