

Preliminary Comments on the REA Planning Document from Dr. Michael Kleinman

Comments on Chapter 4

1. Section 4.1 presents staff's preliminary conclusion that a quantitative risk assessment based on information from controlled human exposure studies is not supported by the evidence available in the current review. What are the Panel's views regarding this preliminary conclusion?

“With regard to the health benchmarks appropriate for evaluation in this review, 100 ppb is the lowest NO₂ exposure concentration for which the evidence indicates the potential for NO₂-induced increases in airway responsiveness. Given this, we reach the preliminary conclusion that 100 ppb is an appropriate health effect benchmark to evaluate. However, we also recognize the important uncertainties associated with the evidence for increased airway responsiveness following exposures to 100 ppb NO₂. These include the general lack of statistically significant results in individual studies at 100 ppb and the lack of an exposure-response relationship based on available studies. Such uncertainties will be taken into consideration when interpreting the potential public health implications of NO₂ air quality concentrations that equal or exceed the 100 ppb health effect benchmark.”

The Brown meta-analysis for resting exposures (Table 1) cites several cases with significant indications of increased airway reactivity. Out of 16 studies listed 12 showed more than 50% of the participating subjects evidencing increased AR after 1 hr or less exposure at 100 ppb or above. There was a broad spectrum of challenge agents. Given this the above statement in the document about lack of significance could be tempered. There should be more specificity about how the agency will “interpret the public health implications,” i.e. is a 1 hr 100 ppb standard protective with a reasonable margin of safety.

2. Section 4.2 discusses the extent to which the available evidence and information could support an updated quantitative risk assessment based on information from epidemiology studies. Section 4.2.1 provides an overview of the epidemiology based risk assessment from the last review. Section 4.2.2 presents staff's consideration of the newly available evidence in the current review.

a. Section 4.2.2.1 presents the basis for staff's preliminary conclusions that (1) an updated epidemiology-based risk assessment estimating respiratory related endpoints attributable to short-term NO₂ exposures would be subject to uncertainties that are essentially the same as those identified in the 2008 REA and (2) an updated epidemiology-based risk assessment in the current review would be unlikely to substantially improve our understanding of NO₂-attributable health risks, or increase our confidence in risk estimates, beyond the assessment from the last review. What are the Panel's views on these preliminary conclusions?

The increase in the agency's stated level of causality for short term effects suggests the possibility that adverse effects are being induced at exposures below the current standard. If so the agency might want to expand on how the appropriateness of the annual and 1 hr standard will be addressed.

06-03-15 Preliminary Draft Comments from Clean Air Scientific Advisory Committee (CASAC) Oxides of Nitrogen Review Panel. These preliminary pre-meeting comments are from individual members of the Panel and do not represent CASAC consensus comments nor EPA policy. Do not cite or quote.

b. Section 4.2.2.2 presents staff's preliminary conclusions that (1) a risk assessment quantifying the development of asthma attributable to longterm NO₂ exposures would be subject to considerable uncertainty due to the inability to distinguish the contributions of NO₂ from the contributions of other highly correlated pollutants and (2) that such a risk assessment would be of limited value in informing decisions in the current review. What are the Panel's views on these preliminary conclusions?

Mixture issues are difficult to interpret but they remain important areas where new policies could be helpful.