

# Comments on the Risk and Exposure Assessment Planning Document for Nitrogen Dioxide

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**Gradient**  
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Thank you for the opportunity to speak today. My opinions are my own, but I received funding from the American Petroleum Institute to attend this meeting.

Over the next few minutes, I will discuss why a new air quality analysis should be conducted for NO<sub>2</sub>, and why a new exposure and risk assessment should not be. I will also discuss why the 2008 Risk and Exposure Analysis (REA; US EPA, 2008) was overly conservative and should not be used to judge the adequacy of the current standard.

I agree with EPA that new data warrant an updated NO<sub>2</sub> air quality analysis for a representative set of core-based statistical areas, or CBSAs. In particular, the recently installed near-road NO<sub>2</sub> monitors should provide a valuable new set of observations that can inform the air quality analysis. However, there are several modifications to the air quality analysis that EPA should consider:

1. There should be an increased emphasis on results at exposure benchmarks above 100 ppb, where there is stronger evidence that adverse health effects could occur;
2. There should be better documentation of the method used to weight the criteria for selecting CBSAs;
3. High NO<sub>2</sub> concentrations should not be a primary criterion for selecting a CBSA;
4. There should be an evaluation of the uncertainty associated with the adjustment factors for NO<sub>2</sub> daily maximum 1-hour concentrations above the 98<sup>th</sup> percentile; and
5. There should be clarification on how near-road and on-road NO<sub>2</sub> concentrations and their uncertainties will be used to inform whether a new exposure assessment is needed.

With regard to an NO<sub>2</sub> REA, I agree with EPA that an updated REA is not warranted unless the air quality assessment indicates an increased likelihood of exposures above appropriate benchmark levels. However, it is critical that these benchmark levels be truly indicative of potential health effects and not be more conservative than necessary to protect public health.

The 2008 exposure assessment relied on benchmarks below 200 ppb, which are not supported by the evidence. It also relied on air quality data that were adjusted upwards to meet current and potential standards. This resulted in the estimated number of days that exceeded health benchmarks being greater than the number of days based on actual data. Finally, as EPA acknowledged, the exposures calculated from the AERMOD model were overestimated. Altogether, the end result was an overly conservative exposure assessment. If EPA conducts an updated exposure assessment, either in an REA or a Policy Assessment, it should fully evaluate the modeling strategy and input data to develop a robust assessment based on the best available information.

Similarly, the 2008 risk assessment was also conservative. The concentration-response function was based on the results of a single-pollutant model from a single epidemiology study by Tolbert *et al.* (2007), which EPA implied likely biased the results away from the null. Notably, the original investigators concluded that measured associations between pollutants and respiratory disease were likely affected by differential exposure measurement error and should be interpreted with great caution. Finally, the 2008 REA did not adequately consider the potential for a threshold for effects, again likely biasing the risks away from the null.

In conclusion, a new air quality analysis should be conducted, but at this time, a new exposure and risk assessment should not be. Also, because the 2008 exposure and risk assessments were overly conservative, they should not be used to judge the adequacy of the current standard during this review. If new exposure and risk assessments are conducted, the input data should reflect realistic scenarios and take uncertainty into account.

## References

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