

Oral Testimony Before the CASAC Ozone Review Panel on the Second External Review Draft of the Welfare Risk and Exposure Assessment for Ozone

Tim Verslycke, Ph.D.
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Thank you for the opportunity to speak on behalf of the Utility Air Regulatory Group (UARG). My comments will focus on two key issues with the current draft of the Welfare Risk and Exposure Assessment (US EPA, 2014a): (1) the relative biomass loss analysis; and (2) the welfare risks of just meeting the current standard *versus* meeting different levels of an alternative cumulative secondary standard. Overall, EPA has not demonstrated that adopting a cumulative secondary standard provides any greater welfare protection than what is provided by the current primary standard.

Of the various analyses presented in the Welfare Risk and Exposure Assessment, EPA puts the greatest weight on its relative biomass loss (RBL) analysis. Specifically, this analysis is used as primary support to recommend a level of the cumulative standard ranging from 7 to 15 ppm-hrs, or somewhat higher. Therefore, my first comment focuses on several limitations and uncertainties with the RBL analysis:

1. No scientific rationale is presented for why a 1 to 2 percent RBL in trees presents an appropriate level of welfare protection considering background contributions and natural variability;
2. The RBL analysis relies on concentration-response functions (or CRFs) that carry increasing uncertainty at lower levels of the cumulative standard (*see first slide*);
3. CRFs are currently only available for 12 tree species (*see second slide*). Some of these CRFs are based on multiple data sets, while others are based on a single study. The inclusion of a new cottonwood study (*presented by light blue CRF on slide*) is especially problematic since it is a clear outlier and a number of uncertainties related to this study were previously highlighted in the ISA (US EPA, 2013). Its inclusion skews the analysis in a manner that shows greater estimated RBL, especially at lower O₃ exposure. Therefore, EPA should have evaluated the impact of this outlier study on its RBL analysis and national assessment.
4. All CRFs are based on seedling studies. These seedling CRFs were shown to either over- or underestimate RBL in mature trees or, for some species, no information was available to determine how accurately they predict mature tree RBL. While EPA cites two recent free-air carbon dioxide enrichment (or FACE) studies as validation for using available CRFs, these studies also carry significant uncertainties. For example, these studies were conducted using only two species (soybean and aspen) and using only two exposure levels (ambient [3-4 ppm-hrs] and elevated [28-46 ppm-hrs]), well outside the range recommended by EPA for the cumulative standard (7-15 ppm-hrs, or somewhat higher); and

5. All CRFs were forced through an intercept of 0% RBL at a W126 level of 0 ppm-hrs (*see second slide*). This extends the study data beyond the original concentration-response to non-existent O₃ exposure conditions below natural background. It also artificially shifts the CRF such that RBLs are over-estimated at low O₃ concentrations.

Taken together, there is significant uncertainty and variability in the RBL analysis which provided the primary basis for the recommended range of the cumulative standard.

My second issue relates to EPA's analysis of RBL, visible foliar injury, and various ecosystem services, under recent conditions, conditions of just meeting the current O₃ standard (75 ppb), and at various levels of the cumulative standard. On the basis of these analyses, EPA identified substantial but uncertain reductions in welfare risks when moving from recent conditions to just meeting the existing standard of 75 ppb or a cumulative standard level of 15 ppm-hrs. Only marginal and increasingly uncertain additional welfare risk reductions were estimated at 11 and 7 ppm-hrs. As I will discuss in my comments on the PA tomorrow, modeled O₃ concentrations at a cumulative standard level of 15 ppm-hrs and at a level that meets the existing standard of 75 ppb are nearly identical.

In conclusion, the current standard already provides a substantial level of welfare protection. Further, there is too much uncertainty with EPA's RBL and other welfare analyses to reasonably conclude that a more stringent alternative cumulative standard, below 15 ppm-hrs, will provide meaningful additional welfare protection. Therefore, CASAC and EPA should recommend no change to the current secondary standard.

On behalf of UARG, thank you for your consideration of these comments.

References

US EPA. 2013. "Integrated Science Assessment for Ozone and Related Photochemical Oxidants (Final)." EPA/600/R-10/076F. 1251p., February.

US EPA. 2014a. "Welfare Risk and Exposure Assessment for Ozone (second External Review Draft)." EPA-452/P-14-003a. 305 p., February.

US EPA. 2014b. "Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards (Second External Review Draft)." EPA-452/P-14-002. 510p., January.