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Oral Testimony of Dr. Paul J. Miller
Northeast States for Coordinated Air Use Management
on U.S. Environmental Protection Agency's Proposed Rule on the
National Ambient Air Quality Standards for Ozone
(72 FR 37818-37919)
August 30, 2007
Philadelphia, Pennsylvania

Good morning, my name is Paul Miller. I am Deputy Director of the Northeast States for Coordinated Air Use Management. NESCAUM is an association of eight state air quality agencies in the Northeast, which includes the six New England States, New Jersey, and New York. I am speaking today on behalf of NESCAUM's member states on EPA's proposal to revise the Secondary National Ambient Air Quality Standard for ozone. The secondary NAAQS is a potentially useful air quality management tool that the Agency has neglected in recent years, but which is clearly needed in this case to protect vegetation from adverse effects of cumulative seasonal ozone exposures that are not addressed by a shorter term primary ozone NAAQS.

Of the two options proposed by EPA, NESCAUM supports the option of establishing a secondary NAAQS in a different form than the primary ozone NAAQS. NESCAUM does not support the option of establishing the ozone secondary NAAQS to be identical with the primary. A secondary NAAQS based on cumulative, seasonal ozone exposure is much more relevant to protecting economically or ecologically important crops, forests, and other sensitive vegetation, as compared to the short-term 8-hour averaged concentration form of the primary ozone NAAQS. The Clean Air Scientific Advisory Committee (CASAC) strongly endorsed the EPA Staff Paper recommendation that protection of crops and ecosystems "requires a secondary

Ozone NAAQS that is substantially different from the primary ozone standard in averaging time, level and form."[1] In light of the EPA Staff and CASAC recommendations, and the extensive body of historical and recent monitoring and research data upon which they based their recommendations, the option of equating the ozone secondary NAAQS with the 8-hour primary is inappropriate and clearly not supportable by the weight of scientific evidence.

We strongly encourage the Agency to avoid the flawed rationale employed in the previous 1997 ozone NAAQS review – that many of the benefits of a secondary NAAQS would be achieved if the primary NAAQS were attained. This "logic" is flawed in at least two ways: First, ozone damage to vegetation persists in areas that attain the primary NAAQS; and second, the relationship between short-term 8-hour peak concentrations and longer-term seasonal aggregations is not constant, but varies over space and time.

Scientific research shows that long-term, cumulative exposure to ozone reduces forest productivity.[2] Recent estimates of seasonal reductions in stem growth for many important eastern U.S. tree species exceeded 30 percent in average ozone years (2001, 2003), with additional growth decrements of 50 percent in a high ozone year (2002).[3] A recent study also finds that increased water transpiration from forest canopies due to chronic exposure to current ambient ozone levels in the eastern U.S. is linked to decreased stream flows.[4] This indicates that ozone pollution exposure, aggregated over the summer growing season, not only exacerbates the effects of drought upon forest growth, but upon stream health as well. In the eastern U.S., chronically high ozone occurs across large areas that are important for agriculture, with crop

yield reductions of 5 to 10 percent as ozone levels reach 0.050 to 0.070 ppm, depending on a crop's sensitivity, and the crop losses continue to increase with higher ozone concentrations.[5]

For the ozone secondary NAAQS, NESCAUM supports the concentration-weighted form proposed by EPA, commonly called "W126." Furthermore, NESCAUM supports a secondary NAAQS that is set at the lower end of the EPA-proposed range that is within the CASAC recommended range of 7 to 15 ppm-hours. Adverse effects on forests and crops have been observed with seasonal ozone exposures below the upper end of the range proposed by EPA. For example, trained observers in the national Forest Health Monitoring program routinely observe foliar ozone damage symptoms in sensitive tree species in areas of the NESCAUM region and elsewhere in the eastern U.S. that are in attainment of current ozone primary and secondary NAAQS and that do not typically experience 3-month seasonal 12-hour W126 levels as high as 21 ppm-hours, which is the upper end of EPA's proposed range.[6]

As noted by CASAC, "The absence of clear cut lower effects thresholds for sensitive vegetation combined with the lower recent estimates of policy-relevant background (typical range of 0.015 to 0.035 ppm) emphasizes the importance of efforts to reduce low- to mid-range environmental exposures below 0.060 ppm."[7] Based on Figures 7B-1 and 7B-2 in the Appendices to the EPA Staff Paper,[8] ozone concentrations in this range correspond most closely to the lower end of the proposed EPA and CASAC-recommended ranges for the W126 form of the secondary NAAQS. The upper end of EPA's proposed range is simply not protective of sensitive vegetation and forest ecosystems. Because there can also be vegetation effects from ozone exposures occurring

at night and during months of the growing season that fall outside of EPA's assumed 3-month window, NESCAUM encourages the Agency to consider a secondary NAAQS toward the lower end of the CASAC-recommended range.

NESCAUM will be submitting more detailed written comments into the docket, and we thank you for your attention to our oral testimony today.

[1] Letter from Dr. Rogene Henderson, Chair, CASAC, to EPA Administrator Stephen L. Johnson, "Clean Air Scientific Advisory Committee's (CASAC) Peer Review of the Agency's Final Ozone Staff Paper," March 26, 2007 (p. 3).

[2] Broadmeadow M. 1998. Ozone and forest trees. *New Phytologist* 139: 123–125; Chappelka AH, Samuelson L. 1998. Ambient ozone effects on forest trees of the eastern United States: a review. *New Phytologist* 139: 91–108.

[3] McLaughlin SB, Nosal M, Wullschleger SD, Sun G. 2007. Interactive effects of ozone and climate on tree growth and water use in a southern Appalachian forest in the USA. *New Phytologist* 174: 109-124.

[4] McLaughlin SB, Wullschleger SD, Sun G, Nosal M. 2007. Interactive effects of ozone and climate on water use, soil moisture content and streamflow in a southern Appalachian forest in the USA. *New Phytologist* 174: 125-136.

[5] Chameides WL, Kasibhatla PS, Yienger J, Levy H. 1994. The growth of continental-scale metro-agroplexes, regional ozone pollution, and world food production. *Science* 264: 74–77.

[6] Smith, G, Coulston J, Jepsen, J, and Prichard, T. 2003. A national ozone biomonitoring program: Results from field surveys of ozone sensitive plants in northeastern forests (1994–2000), *Environ. Monit. Assess.* 87(3): 271−291.

[7] Letter from Dr. Rogene Henderson, Chair, CASAC, to EPA Administrator Stephen L. Johnson, "Clean Air Scientific Advisory Committee's (CASAC) Peer Review of the Agency's 2nd Draft Ozone Staff Paper," Oct. 24, 2006 (pp. 6-7).

[8] EPA OAQPS Staff Paper, "Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information," Appendices, January 2007 (pp. 7B-4 & 7B-5).