PUBLIC COMMENT TO CASAC OZONE REVIEW PANEL TELECONFERENCE MARCH 5, 2007

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Following retirement from the University of California, Davis, in September, 2004, I have published two studies in Inhalation Toxicology (2006a, 2006b) emanating from research supported by the American Petroleum Institute which was completed in 2003. I have also completed a consulting contract with the Environmental Protection Agency in March, 2005, in which I assisted in the updating of human ozone exposure response research for the Criteria Document. Further, I participated as a member of the University of California Office of the President's appointment of a review panel to evaluate the drafts of the California Air Resources Board Staff's Report and Technical Support Document for ozone (2005) and for nitrogen dioxide (2006). The comments I am providing here are my personal opinion and do not represent the University of California or any organization above.

Point 1. On pages 3-8 and 3-9 of the Staff Paper, a case is made for using the standard error (SE), instead of the standard deviation (SD) reported in my 2006 study in Table 3 for FEV_1 response to FA and to square-wave and triangular exposures to 0.06 ppm O_3 and in Table 4 for symptoms of breathing discomfort, viz., pain on deep inspiration (PDI) and total symptoms (TSS). Calculation of the SE is generally used to arrive at a more accurate estimation of the actual mean response upon numerous repetitions of the ascribed experiment. However, in this case, the staff has used it to reduce the observed subject variability in this study by ~ 5.48 times, i.e., the square root of 30 (subjects). They report no overlap in the SE for FEV_1, PDI and TSS for the two 0.06 ppm O_3 exposures and the FA exposure. However, the SD values given in Tables 3 and 4 of my 2006 paper do indicate a substantial overlap between the variability of response for both of the 0.06 ppm O_3 exposures and the FA exposure.

Point 2. On page 3-8 of the Staff Paper, it is stated that although the FEV_1 response to 0.06 ppm O_3 square-wave and triangular exposures in my 2006 study was not significantly greater than that for FA, it appeared to diverge in Fig. 1 from the responses to FA and .04 ppm O_3. This is true, but the 6.6 h response was less than one-half that of the responses for the two 0.08 ppm O_3 exposures, even though the O_3 concentration increase from FA was ¾ of that for the 0.08 ppm O_3 exposures. Further, on p. 3-9 of the Staff Report it is concluded that "a cursory evaluation of the Adams (2006) data as described above, strongly suggest that exposure to 0.06 ppm O_3 causes small group mean FEV_1 decrements in healthy adults…" However, staff have ignored the importance of

this small decrease in FEV_1 for the two 0.06 ppm exposures, compared to that for the two 0.08 ppm exposures which is developed in the last section of my discussion (Adams, 2006). That is, subtracting the postexposure FEV_1 response for the two 0.06 ppm exposures from those observed for the two 0.08 ppm exposures gave results not statistically significant from the net values obtained upon subtracting the final FA value from those for the postexposure values observed for the two 0.08 exposures.

Point 3. On p. 5-22 of the Staff Paper, it is observed that the fraction of subjects in my studies (done in Davis, Calif.) with >15% decrement in FEV_1 upon exposure to 0.08 ppm O_3 was somewhat lower than that observed in EPA studies at Chapel Hill, N.C. (Horstman et al., 1990; McDonnell et al., 1991). Three reasons were advanced, including that a greater attenuation of FEV_1 response occurred due to "adaptation" to living in an area with higher ambient O_3 levels. I have used the EPA AQS Database to compare the hourly average values that made up the 4th highest 8-h value over the 7 year period (1996-2002) at Davis to those for the Wake Forest site in the Raleigh-Durham area for 1985-1989 (only two sites existed at the time in this area) when exposures of the EPA subjects occurred (in studies cited above) at Chapel Hill. The average of the top four daily maximum 8-h values was 0.085 ppm at Davis from 1996 through 2002 and 0.100 ppm at Wake Forest from 1985-1989. Thus, contrary to the opinion expressed by EPA staff, I conclude that the subjects I studied at Davis were not more "adapted" to O_3 than the subjects studied at the EPA laboratory in Chapel Hill.

Thank you for your consideration of the issues I have raised and discussed.

References

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Horstman, D. H., Folinsbee, L. J., Ives, P. J., Abdul-Salaam, S., and McDonnell, W. F. 1990.Ozone concentration and pulmonary response relationships for 6.6-hour exposures with five hours of moderate exercise to 0.08, 0.10, and 0.12 ppm. *Am. Rev. Resp. Dis.* 142:1158-1163.

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