

relate exposure to plant growth response. However, as reflected in the public comments, the Administrator also recognizes that there remain significant uncertainties in determining or quantifying the degree of risk attributable to varying levels of O<sub>3</sub> exposure, the degree of protection that any specific cumulative, seasonal standard would produce, and the associated potential for error in determining the standard that will provide a requisite degree of protection — i.e., sufficient but not more than what is necessary. Given these significant uncertainties, the Administrator concludes that establishing a new secondary standard with a cumulative, seasonal form at this time would result in uncertain benefits beyond those afforded by the revised primary standard and therefore may not be necessary to provide the requisite degree of protection.

Based on his consideration of the full range of views as described above, the Administrator judges that the appropriate balance to be drawn is to revise the secondary standard to be identical in every way to the revised primary standard. The Administrator believes that such a standard would be sufficient to protect public welfare from known or anticipated adverse effects, and does not believe that an alternative cumulative, seasonal standard is needed to provide this degree of protection. This judgment by the Administrator appropriately considers the requirement for a standard that is neither more nor less stringent than necessary for this purpose.

*D. Final Decision on the Secondary O<sub>3</sub> Standard*

For the reasons discussed above, and taking into account information and assessments presented in the Criteria Document and Staff Paper, the advice and recommendations of the CASAC Panel, and the public comments to date, the Administrator has decided to revise the existing 8-hour secondary standard. Specifically,

**Deleted:** Having considered the scientific information discussed in the proposal and summarized above, as well as the recommendations of the staff and CASAC and the public comments on this issue, the Administrator concludes that it is appropriate to replace the current 8-hour average secondary standard form with the cumulative, seasonal W126 form, as that form is better suited to reflect the biological impacts of O<sub>3</sub> exposure on vegetation, and there is adequate certainty in this review to support such a change in form ¶ 3. Averaging Times¶

¶ The Staff Paper, in addition to form, also considered what "averaging" periods or exposure durations are most relevant for vegetation, which, unlike people, is exposed to ambient air continuously throughout its lifespan. For annual species, this lifespan encompasses a period of only one year or less; while for perennials, life spans can range from a few years to decades or centuries.

However, because O<sub>3</sub> levels are not continuously elevated and plants are not equally sensitive to O<sub>3</sub> exposure over the course of a day, season or lifetime, it becomes necessary to identify periods of exposure that have the most biological relevance for plant response. The proposal discussed exposure periods in terms of a seasonal window, a diurnal window, and an annual versus 3-year average standard, as presented below ¶

(1) In considering an appropriate seasonal window, the Staff Paper recognized that, in general, many annual crops are grown for periods of a few months before being harvested. In contrast, other annual and perennial species may be photosynthetically active longer, and for some species and locations, throughout the entire year. In general, the period of maximum physiological activity and thus, maximum potential O<sub>3</sub> uptake for annual crops, herbaceous species, and deciduous trees and shrubs coincides with some or all of the intra-annual period defined as the O<sub>3</sub> season, which varies on a state-by-state basis. This is because the high temperature and high light conditions that promote the formation of tropospheric O<sub>3</sub> also promote physiological activity in vegetation ¶

The Staff Paper noted that the selection of any single seasonal exposure period for a national standard would represent a compromise, given the significant variability in growth patterns and lengths of growing seasons among the wide range of vegetation species occurring within the U.S. that may experience adverse effects associated with O<sub>3</sub> exposures. However, the Staff Paper further concluded that the consecutive 3-month period within the O<sub>3</sub> season with the highest W126 index ... [2]