

## **Review of National Ambient Air Quality Standards for Ozone Final Staff Paper, Human Exposure and Risk Assessments and Environmental Report**

### **Action**

- On January 31, 2007, the Environmental Protection Agency (EPA) staff will complete several documents that are part of the Agency's on-going review of the national ambient air quality standards (NAAQS) for ground-level ozone.
- The first of these documents, known as the Staff Paper, "Review of National Ambient Air Quality Standards for Ozone", reflects comments received from the Clean Air Scientific Advisory Committee (CASAC) and the public following the review of the second draft Staff Paper. CASAC is a Congressionally mandated group of independent scientific and technical experts. They have provided input at each step of the ozone standards review process.
- The Staff Paper presents the final staff conclusions and recommendations for the EPA Administrator to consider when deciding whether to retain or revise the existing primary (health-based) and secondary (welfare-based) ozone standards.

### **EPA Staff Recommendations - Primary Standard:**

- The overall body of evidence on ozone health effects clearly calls into question the adequacy of the current standard. It provides strong support for consideration of an ozone standard that would provide greater health protection for sensitive groups, including asthmatic children and other people with lung disease, healthy children and older adults—especially those active outdoors, and outdoor workers.
- Consideration should be given to revising the level of the standards to protect these sensitive groups from health effects that range from decreased lung function and respiratory symptoms to serious respiratory effects including hospital emergency department visits and hospital admissions for respiratory causes, and possibly cardiovascular-related effects and death.
- Staff also concludes that risks to sensitive groups projected to remain upon attainment of the current standard can reasonably be judged to be important from a public health perspective.
- EPA staff recommends:
  - considering a standard level within the range of somewhat below 0.080 parts per million (ppm) to 0.060 ppm. A standard set within this range could provide an appropriate degree of public health protection and would result in important improvements in protecting the health of sensitive groups. Within this range, staff completed analyses of air quality, exposure, and risk at 0.074, 0.070, and 0.064 ppm representing levels within the upper, middle, and lower parts of the range, respectively.

- retaining 8-hour averaging time and giving consideration to retaining the form of the current standard (i.e., the 4<sup>th</sup> maximum 8-hour average, averaged over 3 years) or an alternative form within the range of 3<sup>rd</sup> to 5<sup>th</sup> maxima, averaged over 3 years.
- specifying the level of the standard to the nearest thousandth ppm (3<sup>rd</sup> decimal place). Ozone air quality measurements reflect that level of precision.

### **EPA Staff Recommendations - Secondary Standard:**

- Results of the assessment of environmental effects suggest that even when the current primary standard is attained, significant environmental effects continue to occur. These results do not support retaining the daily maximum 8-hour average form for the secondary standard.
- Evidence suggests the need to adopt a more biologically relevant form — specifically a cumulative form to adjust for the differences in the way plants respond to ozone exposure as compared to humans.
- In agreement with CASAC, staff recommends considering a form of the standard known as W126. This is a cumulative, weighted total of 12-hour (8 am – 8 pm) exposures over a 3-month period giving greater weight to exposures at higher levels of ozone.
- Staff recommends a range of levels from 21 down to 7 ppm-hrs (parts per million –hours)
- Consistent with advice from CASAC, this final Staff Paper also expands on 2nd draft Staff Paper by:
  - refining and expanding the characterization of health effects and impacts on sensitive groups;
  - more completely discussing exposure levels of concern with emphasis on public health implications; and
  - expanding and updating exposure and risk analyses, including additional uncertainty and sensitivity analyses.
- The staff conclusions contained in the final Staff Paper considered an expanded body of health effects evidence suggesting a wide range of adverse health effects associated with exposure to ambient ozone. This information comes from a number of epidemiological and controlled human exposure studies that:
  - suggest that asthmatic individuals are at greater risk for a variety of ozone-related effects including increased respiratory symptoms, increased medication usage, increased doctors visits, emergency department visits, and hospital admissions;
  - provide highly suggestive evidence that short-term ambient ozone exposure contributes to mortality; and

- report health effects at ozone concentrations lower than the level of the current standards, such as at 0.06 parts per million (ppm) for some highly sensitive individuals.
- EPA also is releasing the final Human Exposure Analysis and the Health Risk Assessment. These documents present estimates of population exposure to ground-level ozone and health risks associated with air quality that meets the current 8-hour standard and as well as several potential alternative 8-hour standards and reflect public and CASAC comments on the previous drafts.
- Finally, EPA is releasing the final “Technical Report on Ozone Exposure, Risk and Impacts Assessments for Vegetation”. This document presents estimates of vegetation exposure to ground-level ozone and vegetation risks for selected crop and tree seedling species associated with air quality that meets the current 8-hour standard as well as several potential alternative secondary standards, and reflect public and CASAC comments on the previous draft.
- These documents are available on EPA’s Web site at: [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_cr\\_sp.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_cr_sp.html) and [http://www.epa.gov/ttn/naaqs/standards/ozone/s\\_o3\\_cr\\_td.html](http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_cr_td.html).
- EPA recently changed the process for reviewing the NAAQS to streamline the reviews and ensure the Agency meets its five-year deadlines. The Agency is not applying that new process to the ongoing ozone review.

### **Next Steps**

- EPA has provided these final documents to CASAC. CASAC plans to hold a public teleconference to provide comments on the final ozone Staff Paper. That teleconference has been scheduled for March 5, 2007.
- EPA has agreed to propose action to revise or retain the current ozone standards by June 20, 2007 and take final action by March 12, 2008.

### **Background**

- The Clean Air Act requires EPA to set National Ambient Air Quality Standards for ozone and five other major pollutants considered harmful to public health and the environment. (The others are particulate matter, nitrogen oxides, carbon monoxide, sulfur dioxide, and lead.)
- The law also requires EPA to periodically review the standards and their scientific basis to ensure that they provide the required level of health and environmental protection, and to update those standards as necessary.

- Tropospheric (ground-level) ozone is formed by reactions in the troposphere of volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>), which are emitted from numerous and diverse mobile (e.g., cars, trucks) and stationary (e.g., power plants) sources. These reactions are most likely to produce high levels of ambient ozone during periods of high temperature and high solar radiation during the summer months.
- EPA last updated the ozone standards in 1997; the decision to revise the standards was challenged in court by a number of parties. The Supreme Court unanimously upheld the constitutionality of the 1970 Clean Air Act provision that authorizes EPA to set NAAQS to protect public health and welfare. The Supreme Court also affirmed that the Clean Air Act requires EPA to set ambient air quality standards at levels necessary to protect the public health and welfare, without considering the economic costs of implementing the standards.