



**Report of the
Clean Air Scientific
Advisory Committee
(CASAC)**

**Review of the NAAQS
for Ozone: Closure on
the OAQPS Staff
Paper (1988) and the
Criteria Document
Supplement (1988)**

ABSTRACT

This is the report of the EPA's Clean Air Scientific Advisory Committee (CASAC) on its review of the Agency's draft documents: "Air Quality Criteria Document Supplement (1988)" and the "Review of the National Ambient Air Quality Standards for Ozone: Assessment of Scientific and Technical Information (1988)". These documents were reviewed in public session on December 14-15, 1988, with the Committee reaching the conclusion that the documents provide an adequate scientific and technical basis for EPA to retain or revise primary and secondary national ambient air quality standards for ozone.

NOTICE

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C. 20460

May 1, 1989

OFFICE OF
THE ADMINISTRATOR

The Honorable William K. Reilly
Administrator
U. S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Dear Mr. Reilly:

I am pleased to transmit via this letter the advice of the Clear Air Scientific Advisory Committee (CASAC) concerning the National Ambient Air Quality Standards for Ozone. CASAC has reviewed and offered comments directly to EPA staff on the EPA criteria document "Air Quality Criteria for Ozone and Other Photochemical Oxidants (1986)," the draft "Criteria Document Supplement (1988)," and the Office of Air Quality Planning and Standards staff position paper "Review of the National Ambient Air Quality Standards for Ozone Assessment of Scientific and Technical Information (1988)" and related support documents.

CASAC previously reached closure on the 1986 Criteria Document. At a meeting held on December 14-15, 1988, CASAC came to closure on the "Criteria Document Supplement (1988)" and the 1988 Staff Position Paper and concluded that they provide an adequate scientific basis for EPA to retain or revise primary and secondary standards for ozone. While reaching closure at this time, the Committee did note an emerging data base on the acute health effects resulting from 6-plus hours of ozone exposure, providing evidence of the possible need for a standard with a 6-8 hour averaging time. However, it was the Committee's view that it would be some time before enough of this developing information would be published in scientific journals to receive full peer review and, thus, be suitable for inclusion in a criteria document. CASAC concluded such information can better be considered in the next review of the ozone standards.

CASAC did not reach a consensus opinion on endorsement of the staff position paper recommendation that "the range of 1-hour average ozone levels of concern for standard setting purposes is 0.08-0.12 ppm for a primary standard." The opinion of the CASAC Ozone Review Committee was divided with regard to the upper range of the standard with eight individuals favoring a range with an upper value of 0.12 ppm, three individuals favored an upper bound in the range of 0.10-0.12 ppm, four individuals favored an upper bound value no higher than

0.10 ppm, and one individual abstained from offering an opinion. Several individuals who supported an upper value of 0.12 ppm as well as all of the other individuals who favored a lower value for the upper end of the range expressed the view that at 0.12 ppm there was little or no margin of safety. As you are aware, the margin of safety is intended to provide protection against adverse effects which have not yet been uncovered by research and effects whose medical significance is a matter of disagreement. Finally, several members of the subcommittee favored development of a standard with a more statistically robust upper bound on the annual distribution of ozone concentrations rather than reliance on the current expected exceedance form of the standard. While the Committee offers no further advice on what form the Agency should consider, we would caution you against any form which alters the degree of health protection afforded by the current standard.

CASAC had substantial discussion of the issue of what are or are not adverse health effects. This discussion was aided by the presentation of this issue in the staff position paper. Within CASAC there was diversity of opinion; some members felt that healthy individuals experience adverse effects when ozone exposure induced any of the responses categorized as moderate (i.e., >10% decrement in FEV or mild to moderate respiratory symptoms) in the staff position paper, while a few members believed that adverse effects would not be experienced until ozone induced more severe effects (i.e., >20% decrement in FEV and moderate to severe respiratory symptoms). The view of some individuals on this matter was influenced by recognition that resolution of the adverse health effect issue represents a blending of scientific and policy judgments and, thus, we feel it appropriate to inform you of the range of our views on this matter.

Of particular concern to CASAC is the potential for effects arising from exposures to ozone with daily peak concentrations at or near 0.12 ppm for periods of 6-8 hours and with co-exposure to other pollutants. This concern is due to air quality analyses which have shown that even in areas which do not repeatedly exceed the ozone standard, ozone concentrations can remain close to 0.12 ppm for several hours per day for extended periods of time in summer. There was concern based on recent controlled human exposure, epidemiology and toxicology studies, that such prolonged exposures could result in increased respiratory impairment. Further, for people exposed to these ozone concentrations over a lifetime, the possibility that chronic irreversible effects may result is of concern, although such changes have not been demonstrated.

The Committee noted that the Criteria Document Supplement failed to cite and discuss a group of "ecological" epidemiological studies of the effects of ozone on various measures of human health such as hospitalizations for respiratory illnesses or exacerbation of chronic respiratory problems. Although these studies have obvious limitations in establishing cause and effect relationships, they have

certain strengths which can aid in regulatory decision-making. Studies of this type should be discussed and evaluated in future criteria documents as a complementary source of information.

While reaching closure on the staff position paper recommending a 1-hour standard, CASAC urged that the Agency provide increased support for research that will prove an improved scientific basis for evaluating the need for standards with multi-hour or seasonal averaging times. Clearly, the obvious, research on this critical environmental health issue must be supported now in order for results to be available for consideration in the next 5-year review cycle. CASAC has enumerated these research needs in some detail in a September 1987 submission to the Agency. The Committee feels these research recommendations are still valid and should be incorporated as expeditiously as possible into the Agency research program.

CASAC did not reach a consensus opinion on endorsement of the staff position paper recommendation of "a 1-hour averaging time standard in the range of 0.06-0.12 ppm" for a secondary standard. The CASAC Ozone Welfare Effects Subcommittee that considered this matter reached a divided opinion; two favored a range with an upper value of 0.12 ppm, three favored an upper value of less than 0.12 ppm, and five favored an upper value of 0.10 ppm. The Committee noted that the form of the standard was of critical importance in protecting against ozone effects on vegetation. The Committee was of the opinion that a cumulative seasonal standard would be more appropriate than a 1-hour standard and felt that such a standard could be developed. CASAC favored issuance of a cumulative seasonal standard form assuming its development would not further delay the standard setting process. If this form of standard cannot be developed in time for the current review, the Committee is of the opinion that you should give serious consideration to setting a 1-hour secondary standard with a maximum concentration of 0.10 ppm. The Committee took note of the lack of information on the effects of ozone on forest ecosystems and urged support for research to remedy this deficiency.

In closing, I would like to briefly comment on CASAC's failure to reach a consensus as to the appropriate range for setting the ozone standards. This lack of consensus is reflective of major deficiencies in our knowledge regarding health and welfare effects of long-term exposure (beyond a few hours) to ozone. The data base is very large and adequate for knowledgeable individuals to reach agreement on the effects of acute exposure to ozone in the range appropriate for setting a 1-hour standard. However, there is not an adequate data base on the effects of multiple hour or seasonal exposures to ozone, especially as regards whether such exposures may produce chronic health effects. This is especially troubling since such long-term exposures to ozone occur in many parts of the United States and involve many millions of people and thousands of acres of crop and forest lands. As a result, there continues to be concern for the public health

and welfare threat which may be posed by chronic exposure to ozone. It is critical that the data base on health and welfare effects related to multiple hour, seasonal and lifetime exposures of ozone be increased through an accelerated and expanded research effort. This must be done so that future considerations of ozone standards will derive from a stronger scientific base.

CASAC recognizes that your statutory responsibility to set standards requires public health policy judgments in addition to determinations of a strictly scientific nature. While the Committee is willing to further advise you on the ozone standards, we see no need, in view of the already extensive comments provided, to review the proposed ozone standards prior to their publication in the Federal Register. In this instance, the public comment period will provide sufficient opportunity for the Committee to provide any additional comments or review that may be necessary.

CASAC would appreciate being kept informed of progress on establishing revised or new ozone standards and plans for research on ozone effects. Please do not hesitate to contact me if CASAC can be of further assistance on this matter.

Sincerely,



Roger O. McClellan, D.V.M.
Chairman, Clean Air Scientific Advisory
Committee

ROM:ewb