



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

June 1, 1994

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

EPA-SAB-CASAC-LTR-94-007

Honorable Carol M. Browner
Administrator
U.S. Environmental Protection Agency
401 M St., S.W.
Washington, D.C. 20460

Subject: Clean Air Scientific Advisory Committee Closure on the
Supplements to Criteria Document and Staff Position
Papers for SO₂

Dear Ms. Browner:

The Clean Air Scientific Advisory Committee (CASAC) at a meeting on April 12, 1994, completed its review of the documents: Supplement to the Second Addendum (1986) to Air Quality Criteria for Particulate Matter and Sulfur Oxides; Assessment of New Findings on Sulfur Dioxide and Acute Exposure Health Effects in Asthmatics; and Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Supplement to the 1986 OAQPS Staff Paper Addendum. The Committee notes, with satisfaction, the improvements made in the scientific quality and completeness of the documents.

With the changes recommended at our March 12 session, written comments submitted to the Agency subsequent to the meeting, and the major points provided below, the documents are consistent with the scientific evidence available for sulfur dioxide. They have been organized in a logical fashion and should provide an adequate basis for a regulatory decision. Nevertheless, there are four major points which should be called to your attention while reviewing these materials:



Recycled/Recyclable
Printed with Soy/Canola Ink on paper that
contains at least 50% recycled fiber

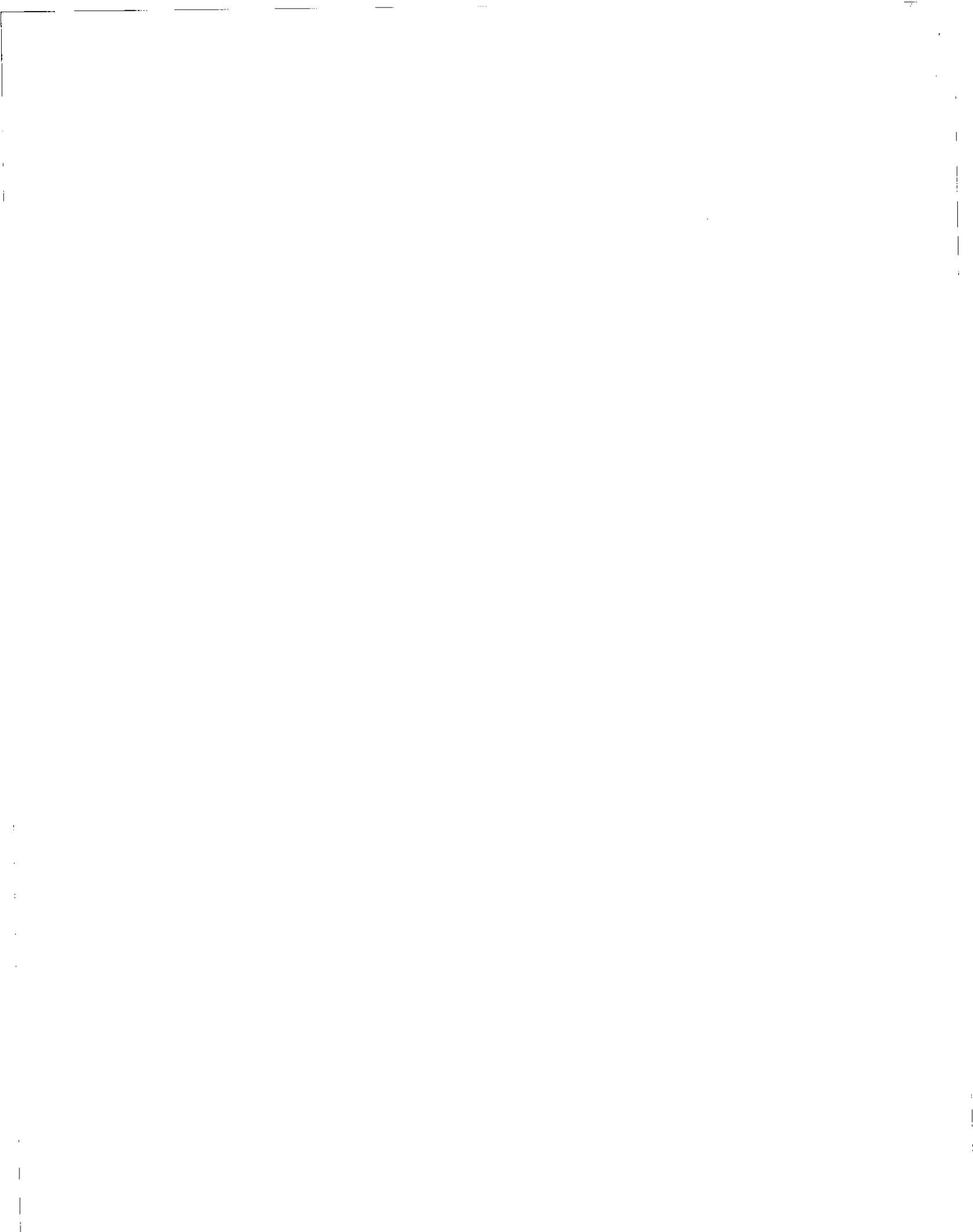


1. A wide spectrum of views exists among the asthma specialists regarding the clinical and public health significance of the effects of 5 to 10 minute concentrations of sulfur dioxide on asthmatics engaged in exercise. On one end of the spectrum is the view that spirometric test responses can be observed following such short-term exposures and they are a surrogate for significant health effects. Also, there is some concern that the effects are underestimated because moderate asthmatics, not severe asthmatics, were used in the clinical tests.

At the other end of the spectrum, the significance of the spirometric test results are questioned because the response is similar to that evoked by other commonly encountered, non-specific stimuli such as exercise alone, cold, dry air inhalation, vigorous coughing, psychological stress, or even fatigue. Typically, the bronchoconstriction reverses itself within one or two hours, is not accompanied by a late-phase response (often more severe and potentially dangerous than the immediate response), and shows no evidence of cumulative or long-term effects. Instead, it is characterized by a short-term period of bronchoconstriction, and can be prevented or ameliorated by beta-agonist aerosol inhalation.

2. It was the consensus of CASAC that the exposure scenario of concern is a rare event. The sensitive population in this case is an unmedicated asthmatic engaged in moderate exercise who happens to be near one of the several hundred sulfur dioxide sources that have the potential to produce high ground-level sulfur dioxide concentrations over a small geographical area under rare adverse meteorological conditions. In addition, CASAC pointed out that sulfur dioxide emissions have been significantly reduced since EPA conducted its exposure analysis and emissions will be further reduced as the 1990 Clean Air Act Amendments are implemented. Consequently, such exposures will become even rarer in the future.

3. It was the consensus of CASAC that any regulatory strategy to ameliorate such exposures be risk-based - targeted on the most likely

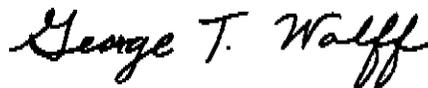


sources of short-term sulfur dioxide spikes rather than imposing short-term standards on all sources. All of the nine CASAC Panel members recommended that Option 1, the establishment of a new 5-minute standard, not be adopted. Reasons cited for this recommendation included: the clinical experiences of many ozone experts which suggest that the effects are short-term, readily reversible, and typical of response seen with other stimuli. Further, the committee viewed such exposures as rare events which will even become rarer as sulfur dioxide emissions are further reduced as the 1990 amendments are implemented. In addition, the committee pointed out that enforcement of a short-term NAAQS would require substantial technical resources. Furthermore, the committee did not think that such a standard would be enforceable (see below).

4. CASAC questioned the enforceability of a 5-minute NAAQS or "target level." Although the Agency has not proposed an air monitoring strategy, to ensure that such a standard or "target level" would not be exceeded, we infer that potential sources would have to be surrounded by concentric circles of monitors. The operation and maintenance of such monitoring networks would be extremely resource intensive. Furthermore, current instrumentation used to routinely monitor sulfur dioxide does not respond quickly enough to accurately characterize 5-minute spikes.

The Committee appreciates the opportunity to participate in this review and looks forward to receiving notice of your decision on the standard. Please do not hesitate to contact me if CASAC can be of further assistance on this matter.

Sincerely,



George T. Wolff, Ph.D.
Chair, Clean Air Scientific
Advisory Committee

