

**Preliminary Comments on the PA from Dr. Donna Kenski**

*Introduction and Background for the Policy Assessment (Chapter 1) - Chapter 1 provides introductory information including a summary of the legislative requirements for the NAAQS, an overview of the history of the SOx NAAQS and the decisions made in the last review, and a summary of the scope and approach for the current review.*

*1. Does the Panel find the introductory and background material to be clearly communicated and appropriately characterized?*

Yes, these short introductory descriptions of the review process and the history of prior NAAQS reviews are helpful for setting the stage. This one was just long enough.

*Current Air Quality (Chapter 2) - Chapter 2 provides information on emissions (section 2.1), air monitoring methods and network (section 2.2), and current air quality (section 2.3).*

*2. To what extent does the Panel find this information to provide useful context for the review and to what extent is the information presented appropriately characterized and clearly communicated?*

The level of detail presented here was about right. The text says Fig 2-2 shows emissions trends through 2015, but it actually goes to 2016. Kudos to EPA for including data this current. Despite these very significant reductions in SO<sub>2</sub> over the last few years, the PA never mentions these changes in real world emissions. It seems like the PA ought to acknowledge these changes and how they might be relevant to to the Administrator's decision, along with a few words about other regulatory and market pressures that continue to drive ambient SO<sub>2</sub> down. Both Figures 2-4 and 2-5 ought to include an explanation of the blue area and white line: 10-90 percentiles? White line = median or mean?

*Review of the Primary Standard (Chapter 3) - Chapter 3 summarizes the approaches for the last and current review of the primary standard for SOx (section 3.1), presents key evidence-based (section 3.2.1) and exposure/risk-based (section 3.2.2) considerations in the review, preliminary staff conclusions (section 3.2.3), and also identifies key areas of uncertainty and data gaps (section 3.3).*

*3. Consistent with the established NAAQS process, and the approach for the last and current reviews, the discussions of the health effects evidence and exposure/risk information have been organized around a set of policy-relevant questions for the review. Does the Panel consider the*

1 *document to provide the appropriate level of detail in addressing these policy-relevant*  
2 *questions?*

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4 I like the use of the policy questions to focus the PA discussions. The level of detail seems fine,  
5 especially because the authors have done a good job in referencing the relevant sections of the  
6 ISA and REA. It would be even more helpful if these textual references to the ISA and REA  
7 were hyperlinks, so the information could be accessed more easily.

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9 Section 3.1.1.2.2, Averaging Time, does not make a convincing case for retaining the current 1-  
10 hour averaging time. If the health data show effects at 5 minute exposures, and we can easily  
11 measure 5 minute ambient concentrations, it seems reasonable for the standard to reflect that. At  
12 the very least, this document should provide a strong argument for why a 5-min standard is not  
13 feasible. I don't think that referring to the prior review is adequate justification, given that much  
14 more data is available now. Other criteria pollutant standards deal with 'instability' by selecting  
15 lower percentiles and multi-year averaging.

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17 *4. The discussion of the health effects evidence (e.g., section 3.2.1) draws from the most recent*  
18 *information contained in the second draft ISA for SO<sub>x</sub> and information from the previous review*  
19 *described in previous Air Quality Criteria Documents. a. Does the draft PA accurately reflect*  
20 *the key aspects of the currently available health effects evidence for SO<sub>x</sub> as characterized in the*  
21 *second draft ISA and the extent to which it differs from that available at the time of the last*  
22 *review? b. Does the draft PA accurately reflect key uncertainties in the currently available*  
23 *health effects evidence for SO<sub>x</sub>, including with regard to concentrations eliciting effects in*  
24 *people with asthma, populations at risk, and the extent to which these uncertainties may differ*  
25 *from those existing at the time of the last review? c. Does the Panel find the presentation to be*  
26 *technically sound, clearly communicated, and appropriately balanced?*

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28 Health effects is not my area of expertise, but I found this section to be well written and clear in  
29 describing the new health information and how it enhances our previous understanding of SO<sub>2</sub>  
30 effects.

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32 *5. The discussion of the quantitative analysis of exposure and risk (section 3.2.2) draws from the*  
33 *analyses described in the draft Risk and Exposure Assessment (REA). a. Does this discussion*  
34 *accurately reflect the analyses contained in the draft REA, as well as associated key*  
35 *uncertainties and public health implications? b. Does the Panel find the presentation to be*  
36 *technically sound, clearly communicated and appropriately balanced?*

1 Yes, this section was an accurate reflection of the REA. Section 3.2.2.1 does not mention  
2 accounting for variability due to race or ethnicity. Was it incorporated in the model but not  
3 mentioned, or was it not accounted for? If not, please explain why.

4  
5 *6. This document has integrated health evidence from the second draft ISA and risk and exposure*  
6 *information from the draft REA as it relates to reaching preliminary staff conclusions about the*  
7 *adequacy of the current standard (section 3.2.3). a. Does the Panel view this integration to be*  
8 *technically sound, clearly communicated, and appropriately characterized? b. Does the*  
9 *document appropriately characterize the results of the draft REA, including their significance*  
10 *from a public health perspective?*

11  
12 *1. What are the views of the Panel regarding the staff's discussion of considerations related to*  
13 *the adequacy of the current standard? Does the discussion provide an appropriate and*  
14 *sufficient rationale to support preliminary staff conclusions?*

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16 The PA, along with the ISA and REA, makes an excellent case for the adequacy of the  
17 current standard to protect most sensitive populations.

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19 *8. What are the views of the Panel regarding the key uncertainties and areas for additional*  
20 *research and data collection that are identified in the draft PA (section 3.3)? Are there*  
21 *additional areas that should be highlighted?*

22  
23 As mentioned above, EPA needs to develop an air quality model that will generate 5-min data,  
24 either by modifying AERMOD or SCICHEM or another model. Continuing work to assess  
25 effects of lower-level SO<sub>2</sub> exposures on the most sensitive populations is a given. Providing  
26 adequate support to state and local monitoring agencies to collect high-quality measurements for  
27 all 5-minute intervals of each hour is another given.

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29 Minor edits:

30 p. 3-44, line 4, change first 'is' to 'in'

31 p. 3-44, line 6, change area to areas

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