Preliminary Comments on the ISA from Dr. Ronald Wyzga

Charge # 5 - Populations and Lifestages Potentially at Increased Risk for Health Effects Related to Sulfur Dioxide Exposure

Chapter 6 has been revised in two important ways. First, the introductory material has been expanded and clarified to provide more information on relationships between the various types of factors that may contribute to increased risk in a population or lifestage. Second, evaluation of the evidence for potential at-risk factors is now focused on respiratory effects, since that is the only outcome category for which the ISA concluded that a "causal" or "likely causal" relationship exists.

Please comment on the adequacy of these revisions to clarify the characterization of the evidence for increased risk of SO2-induced health effects in different populations and lifestages.

Comment: I am a bit disappointed by this Chapter: first of all, it need clearly state what all of its objectives are and how its contents/conclusions will be used; secondly, it mimics much of the information in the preceding chapter without really adding any new perspective; finally, it could provide more detail that would help define all of the conditions for which health risks are elevated.

Section 6.3.1

In discussing asthmatics, it is important to identify those behavioral, environmental, and physical characteristics that could exacerbate asthmatic response, such as the presence of exercise, not being medicated, cold weather, or being obese. This is not to minimize the possibility of asthmatic response, but it could provide information both to asthmatics and to the public health community about those conditions when as adverse response is more likely.

Section 6.5.1.1

One reason that children may be more susceptible is that they spend more time outdoors and that they exercise more frequently.

Section 6.5.3 Since ambient levels of SO_2 are tied to specific point sources, those with lower socio-economic status may live nearer to these sources as neighborhoods near sources may be less desirable.

Other Comments:

Executive Summary (and Chapters 1 and 2): It is noted that emissions have decreased considerably from 1990 to 2011 and that concentrations of the annual 99th percentile have decreased noticeably from 2011 to 2015. When will emissions estimated beyond 2011 become available? It would be of interest to note that they have also decreased in the most recent period.

Chapter 1:

p.1.8, l. 14: insert "parts of" before "the West Coast"

p. 1-9, l. 5: Something should be said about the performance of these models here.

p. 1-10, ll. 1-7: what about the relative concentrations between ambient and indoor levels? This as important as the correlations.

l. 12: What is "moderately correlated"?

p. 1-12:ll. 12-14: This sentence confuses me. Why are they "most informative" when measured levels are available?

p. 1-17, l. 8.: What is meant by "moderate decrement"?

p. 1-27, ll. 19-30: Measurement error can also complicate/potentially bias estimates of the shape of the dose=response curve. Since this is referred to later, it should be mentioned here.

p. 1-29, ll 24-28: Children may also be at increased risk because they spend more time outdoors and exercise more often.

Chapter 2:

p. 2-1: Are there any data available to update Figure 2-1? Concentrations have declined from 2011 t0 2015.

p. 2-74, l. 4: Delete "good" as it is subjective and within a factor of two may not be "good" in the minds of some readers.

Chapter 5:

p. 5-17, ll, 26-27: Are these cutoffs defined to be the level of adversity?

p. 5-30, l3.: Here the co=pollutant issue could be more important as on-road sources, including SO2 from diesel emissions could be more highly correlated.

p. 5-34, l. 19: What is an "imprecise association"?

p. 5-35, section titled Respiratory Symptoms in Populations with Asthma: There should be some attempt to couple the symptom results with the lung function results

p. 5-39, l.4; symptom "categories"?

p. 5-63, ll. 1-8: This result could also be due to the fact the individuals may spend more time outdoors and exercising in the summer (often vacation) months.

p. 5-65, section titled Concentration-Response Relationship: The fact that measurement error can influence the estimated shape of a dose-response curve need be stated.

p. 5-71, ll. 31-36: See above comment.

p. 5-109, ll. 10-15: There could also be behavioral differences among locations as well; e.g., amount of time outdoers, exercise levels and frequency, use of air conditioning, etc.

p. 5-135, ll. 1-9: See comment for p. 5-65.

p. 5-144: Mention is made of the several positive studies; while statistical significance is not the end-all, it would also be helpful to learn how many of these studies showed significant results.

p. 5-150, ll. 22-23: See above comment.

p. 5-261, l. 10: See above comment.

p. 5-263, l. 11: See above.

p. 5-271-ll. 13-26: See comment for p. 5-65.

p. 5-284, ll 5-6: What does "positive, yet imprecise" mean? Positive but not significant?
l. 9-14: I would worry about EC and VOCs as possible confounders.