

Comments submitted by Dr. Dave Eastmond for the purpose of discussion during the December 19, 2014 teleconference

Add these comments from Page 32 to the Additional Specific Comments located on pages 52-54. Recommendations by DA Eastmond are shown in tracking mode.

1. Hemoptysis (coughing up blood) was also seen in the Ballal et al. (1998) study, which should be mentioned in EPA's study description. Consider adding to Table 1-1 (p. 50 and possibly to p. 45)
2. In Table 3 in the Ali et al. (2001) study, the direct comparison between the exposed and the control groups, only the FEV1 % (Forced Expiratory Volume) is higher in the exposed group than in the controls – this appears to be a beneficial effect and should be noted in EPA's study description, though the authors noted that it could be a result of different smoking rates among the controls and the exposed workers. Add to Table 1-1 (p.51).
3. The small sample size (N=2 and 4) should be highlighted for the Anderson et al. (1964) study. Because of this, less weight should be placed on the results of this study. The sample sizes for this study should be noted in footnotes to Fig. 1-1 (p.58) and possibly on Fig. 1-4 (p.32).
4. Seeman and Carchman (2008) reports on ammonia exposure from cigarette smoke exposure. This study is highly suggestive that habituated cigarette smokers need to be separated from non- smoking groups, not just for respiratory effects of smoking, but additionally due to potential supplemental exposure to ammonia due to its contamination within tobacco products. Consider adding to p.xli (p.41).
5. The study by LD Calvert et al. (2009) might be a helpful starting point if there is merit in characterizing baseline plasma levels of ammonia expected across different populations at risk. Consider adding to page 1-33 (p.77).
6. There is virtually no difference in pre-shift values between the ammonia and urea plants in the Rahman et al. (2007) study, indicating that the effects that were measured in this study are primarily acute effects of exposure that appear to be reversed overnight. This provides additional evidence supporting EPA's selection of the NOAEL, because the effects reported at the Rahman et al. LOAEL appear to be acute effects of exposure. Consider adding to page 1-1 (p.45) and/or page 1-4 (p.48).
7. The addition of an evidence table to Section 2.2.1 on page 2-2 is recommended (see Table 2 below-above for example).
8. EPA could strengthen the justification for selection of the higher control levels of exposure from Holness et al. (1989) by adding a brief description and explanation of outcomes in the Rahman et al. (2007) study. For example, the magnitude of change in FEV1 and FVC (Forced Vital Capacity) are relatively small compared to changes that might be of concern in a clinical setting (i.e., difference of 200 ml). In addition, clarification that the respiratory symptoms (e.g. cough and chest tightness) are self-

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reported adds perspective. It might also be useful to include a brief discussion of potential co-exposures to other materials/chemicals with similar respiratory effects (e.g. formaldehyde, particulate dust, sodium carbonate). Consider adding to page 1-4 (pp.48-49).